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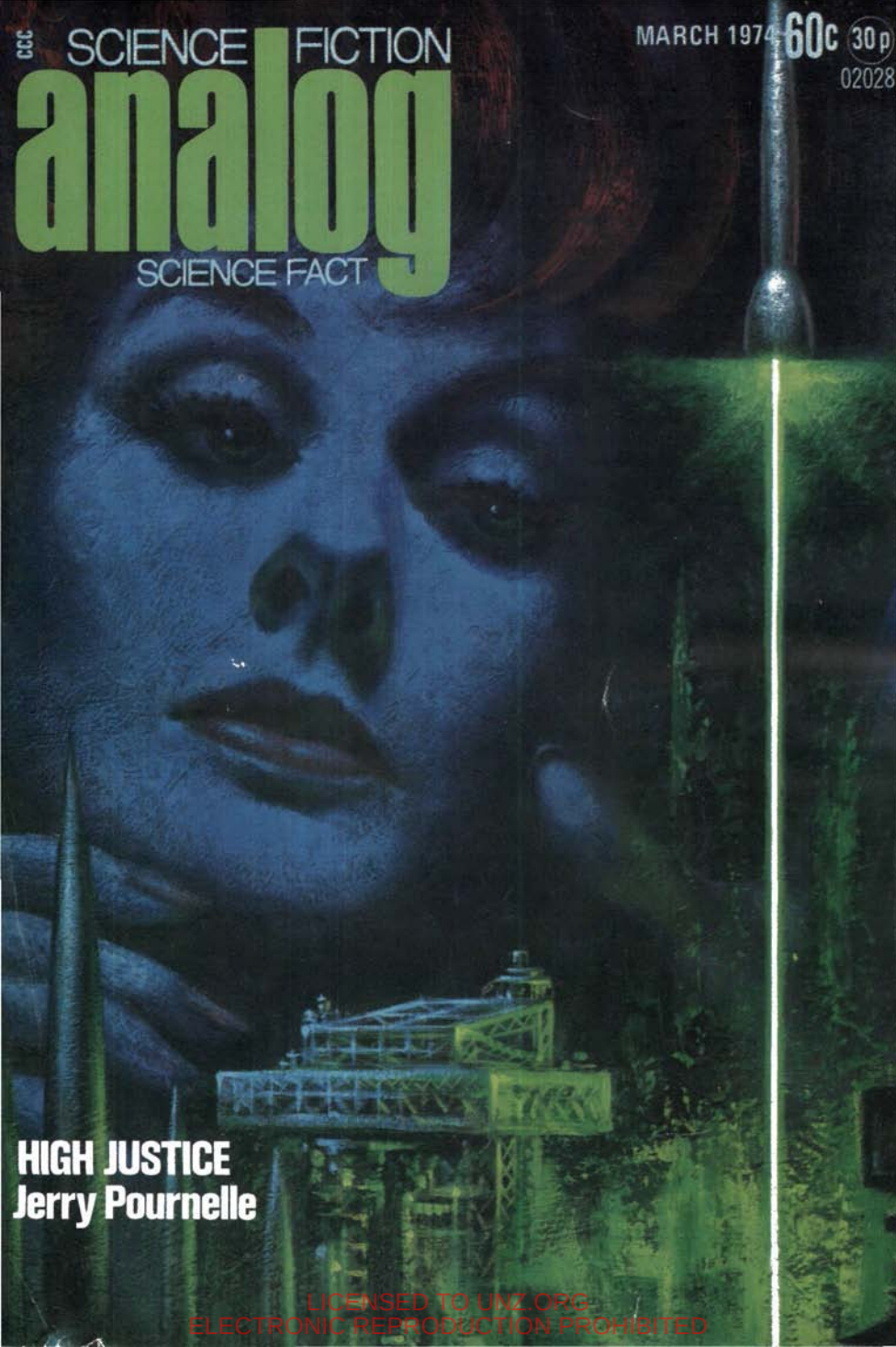

HIGH JUSTICE
Jerry Pournelle

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analog

a calendar of upcoming events

February 24-March 1, 1974:
Annual Meeting of the American Association for the Advancement of Science, San Francisco Hilton, St. Francis, Sheraton Palace; San Francisco, California. Some items of interest: Ray Bradbury on Science; Velikovsky's Challenge to Science; Cosmic Evolution; Search for Extraterrestrial Life; Emerging Portrait of the Planets; Skylab Science Experiments, A First Report. Advance Registration: $17 for individual; $22 for individual and spouse; $8 for young people and students. Info: AAAS Department R, 1515 Massachusetts Avenue NW, Washington, DC 20005.

March 1974:
Observational Data for Comet Kohoutek (Info: IAU Circular 2577):

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March 4	3h 04m.6	+16° 28′
March 14	3h 29m.8	+17° 44′
March 24	3h 51m.5	+18° 41′

March 1-March 3, 1974:
BOSKONE XI (New England Regional SF Conference), Hotel Sheraton-Boston, Boston, Massachusetts. Guest of Honor, Isaac Asimov; Official Artist, Eddie Jones. Registration: $3 until February 15, 1974; $5 after February 15 and at the door. Info: BOSKONE XI, NESFA, Box G, MIT Branch PO, Cambridge, Massachusetts 02139.

March 25-March 28, 1974:
General Meeting of the American Physical Society, Philadelphia, Pennsylvania. Info: ASP, 335 East 45 Street, New York City 10017.

March 25-March 29, 1974:
International Convention and Exposition, New York, New York. Info: D. Larson, Manager, Institute of Electrical and Electronics Engineers Incon, 3600 Wilshire Boulevard, Los Angeles, California 90010.

March 29-March 31, 1974:
MARCON (Ohio Regional SF Conference), Holiday Inn East, Columbus, Ohio. Guest of Honor, Hal Clement. Info: Larry and Cele Smith, 194 East Tulane Road, Columbus, Ohio 43202.

—ANTHONY R. LEWIS

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THE EXPERTS

EDITORIAL

This is in the nature of a book review.

The book is "Life Beyond Earth and the Mind of Man." It is a transcription of a symposium held at Boston University on November 20, 1972. The speakers included superluminaries such as Carl Sagan, Philip Morrison and Ashley Montagu. The book is published by NASA's Scientific and Technical Information Office, and is available from the Government Printing Office at $1.25, postpaid.

Save your money.

The men who made up the symposium's panel were a distinguished group of experts in astronomy, physics, biology, anthropology and theology. Each of them an acknowledged leader in his field.

But what is an expert? The dictionary defines "expert" as one who is "taught by use, practice or experience; clever; skillful . . . hence, one who has a special skill or knowledge in a subject; a specialist." The word comes from a Latin root, *experiri*, which means, "to try."

While each of the learned gentlemen on the panel at Boston University may have been an expert in his own field, none of them are experts in extraterrestrial biology. None of them has had "use, practice or experience" with extraterrestrial life.

George Gaylord Simpson pointed out from his Harvard bastion, when NASA created a special research team for exobiology: "This is the first time in the history of science that a discipline has been established before proof of its subject matter came to hand."

Granted, the BU panelists were not—*and could not be*—experts in the study of extraterrestrial life. Still, they are very intelligent and capable men. Yet their remarks, as transcribed in this book, sound curiously weary, stale, flat and unprofitable to a science-fiction reader.

Who were the panelists?

Carl Sagan needs little introduction here; he is one of the world's foremost astronomers and a pioneer in seeking the bases for de-

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tecting extraterrestrial life. *Philip Morrison* is unquestionably one of the most brilliant of human beings; a physicist, a philosopher of science, a teacher (as opposed to an educator), a lucid, witty, charming man; he suggested back in the 1950's that radio telescopes should be used to search the heavens for meaningful signals from alien intelligent races. *Ashley Montagu* is an anthropologist and social biologist of worldwide stature. *Krister Stendahl* is Dean of the Harvard School of Theology. *George Wald* is a Nobel laureate biologist, also from Harvard. *Richard Berendzen* is an astronomer at BU, an historian of science, and served as moderator for the panel.

You'd expect that men of this caliber would produce a powerful, free-ranging discussion of the possibilities and consequences of discovering life on other worlds. You'd be wrong.

Sagan was by far the most interesting, mainly because he was the first speaker and got most of the groundwork clearly established. He confined his remarks to communicating by radio or other electromagnetic means with extraterrestrials. As did all the panelists. They rejected outright the idea that there might be intelligent life elsewhere in our own solar system, and that an intelligent race from another star could physically cross interstellar distances.

Sagan asked a basic question: How many intelligent races might there be in the Milky Way galaxy? Then he pointed out that the answer is unknowable, because we don't know much about any of the factors involved—which include the rate at which new stars are born, how many stars have planets, how many planets might be suitable for life to evolve on them, how likely it is for life to develop intelligence, whether or not intelligent creatures will produce technological civilizations, and how long a technological civilization can endure before it collapses or destroys itself.

All solid points, and all of them considered in science-fiction circles for many years. Perhaps this was new to the audience at BU, but if there were any science-fiction fans in that audience, they must have started yawning early.

Sagan did make one important announcement. He stated that, when the current improvements are finished on the Arecibo radio telescope, it will be powerful enough to pick up radio signals from anywhere in the galaxy if they're beamed out by a similarly-powerful radio transmitter. In other words, we can now converse with any race in the Milky Way that has reached our level of technology.

Apparently this thought made other members of the panel uneasy.

Sagan also pointed out that we have already sent signals—radio, television, and radar microwaves—out into interstellar space, even

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though we didn't do it deliberately. He said, "You can imagine a wavefront surrounding the Earth, traveling at the velocity of light, carrying on it *Duffy's Tavern* (a radio show of the 1940's), the 1928 election returns, and Enrico Caruso arias. It is faint, but it is out there. And you can imagine civilizations some thirty, forty, fifty light-years out, saying, 'Ah, so *that's* what they were doing on Earth fifty years ago!' "

Wald, the biologist, started out by saying he assumes that life on other worlds will be based on carbon, hydrogen, nitrogen and oxygen, just as we are.

Then he showed how *really* ethnocentric he is by decrying the possibility that contact with extraterrestrials might lead to getting a cure for cancer from them—before he or any other human can figure it out for himself. Wald worried aloud that a vastly superior intelligent race could swallow us alive, much the same way that Western civilization has destroyed cultures around the world.

He took a firm stand for interstellar isolationism, turning his back on the possibilities that contact with extraterrestrial intelligences might be beneficial to the human race.

Would contact with a wiser race destroy our culture? Just how do you define that emotional word, *destroy*? Certainly human civilization

continued on page 176

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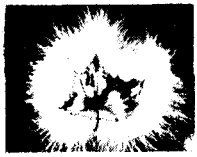

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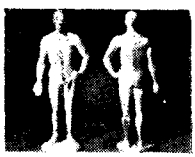

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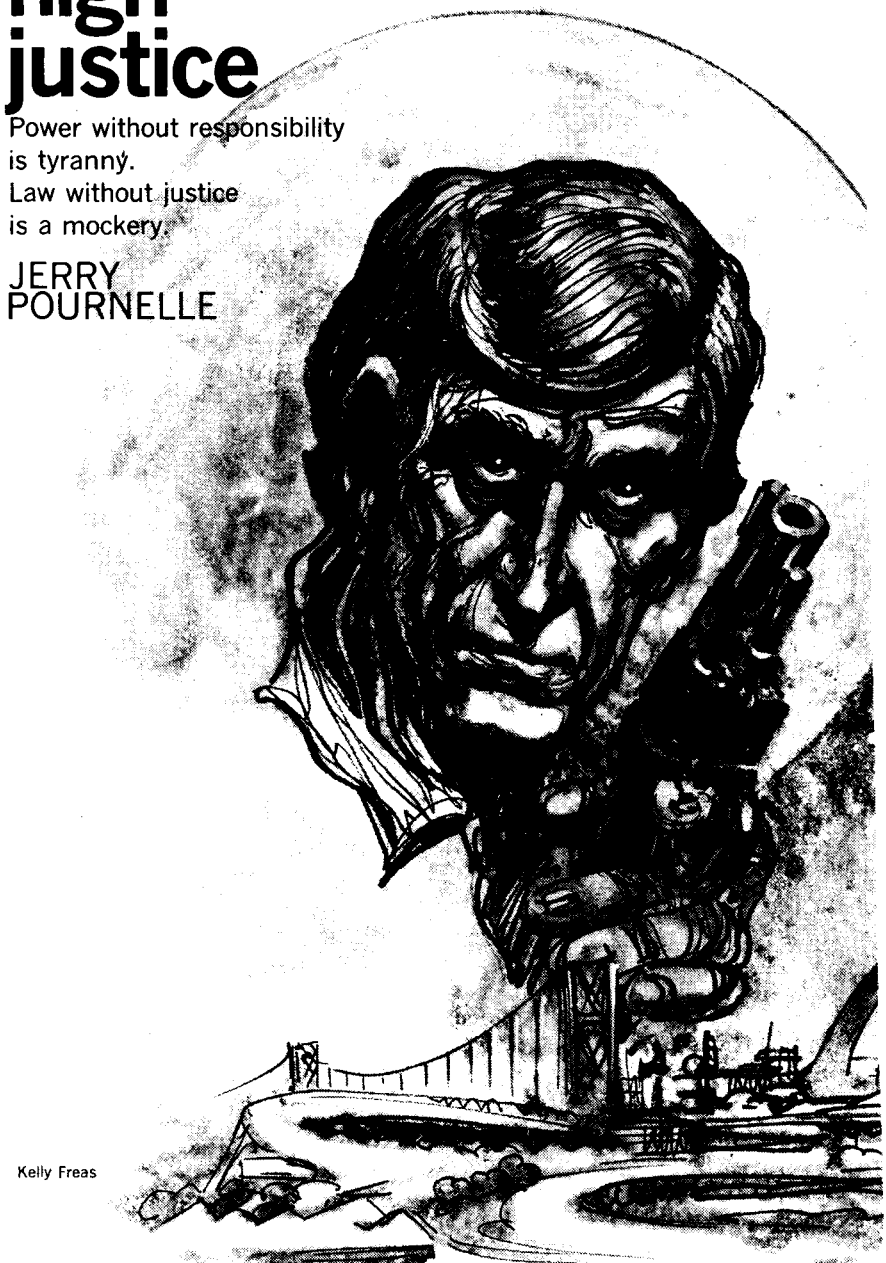
Power without responsibility
is tyranny.
Law without justice
is a mockery.

JERRY
POURNELLE



Kelly Freas

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His name was Aeneas MacKenzie, he was thirty-eight years old, and his life no longer had a purpose. He was skilled in the law and could easily join some firm where he would spend his life protecting the wealth of clients he detested; and he thought it would be better if a Mafia contract, or a CIA termination order, prevented that.

Either rescue was possible, but neither was very likely. He was no longer a threat to the Mafia, no matter that he had done them much harm in the past. Revenge was seldom profitable. His murder might create problems, and alive he was no problem to them at all.

There was a better chance that a professional would be sent from the agency. Aeneas would be a threat to President Gregory Tolland as long as he lived. Aeneas knew there were dedicated and loyal men who would make any sacrifice to protect the President; the man who killed him might be Aeneas' friend. Tears would not spoil his aim; they would not have made Aeneas miss.

Melodrama, he told himself. And yet: Aeneas MacKenzie had destroyed a President. Years of corruption had been swept away by Greg Tolland and his dedicated young men; but then Aeneas had traced the tentacles of the Equity Trust right into the anteroom of the White House. His grand jury had emptied the Executive Office of the President as efficiently as plague. Neither the Equity Trust nor President Tolland would ever forgive that, but for different reasons. Tolland was honest. Aeneas believed that still.

"Why?" the President had demanded. "You've been with me for sixteen years, Aeneas. You elected me! Why did you do this to me?"

"When you made me solicitor general, you ordered me to clean house. Duty and Honor, Greg. Remember?" And Aeneas had writhed at the pain in Tolland's eyes, but his gaze never wavered, and his face never lost the grim, dedicated stare that had become familiar to every American with a TV set.

"You could have told me first, Aeneas. We could have worked quietly. God Almighty, did you think I was part of that? But now you've ruined me. The people have no confidence in me—three more years I'll be in this office, and the people hate me. Do you know exactly what you've done?"

And Aeneas wanted to shout that he did, but he said nothing.

"You've robbed the young people of their birthright. You took away their confidence. You've told the people of this nation that there's no one they can trust, and probably assured the election of that gang of crooks we spent all our lives trying to break . . . you could have come to me, Aeneas."

"No. I tried that. I couldn't see you, Greg. I couldn't get past that barrier you built. I tried."

"But not hard enough. I should

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have known better than to trust a fanatic . . . get out of here, Aeneas. Just leave."

And Aeneas had walked away, leaving his only friend sitting in the Oval Office with his plans in ruin . . .

But with the country no better off, Aeneas told himself bitterly. *We have no goals beyond comfort. The people are decadent and expect corruption. You have to rub their faces in dirt before they get upset. Then, of course,* then *they demand blood; but how much of their righteous indignation comes from guilt? How much is sorrow because no one ever offered them a price?*

The jet began its gut-wrenching descent into La Paz. Below were the sparkling colors of the Sea of Cortez, dark blue for deep water, lighter blue in the shallows, the brilliant white of the shores; incredible reds where the coral reefs were close to the surface, creamy white wakes in the great bay where ships endlessly came and went. Beyond the bay was the sprawl of a city, ugly, filthy, but *alive,* growing and feeling greatness.

"The harbor is large enough to hold all the navies of Christendom," the Conquistadores had reported to the king of Spain; and it was all of that. Giant cargo vessels, tramp steamers, ferry boats from the mainland; ships everywhere. Industries had sprouted around the bay, and great haciendas with red tiled roofs dominated the heights of Espiritu Santo Island. Railroads snaked north to the Estados Unidos del Norte, that colossus which so dominated Mexican thoughts and so thoroughly dominated the Mexican economy . . .

Only not this time. Aeneas smiled bitterly. That had been one of his defeats. The miracle of Baja California was wrought by a power independent of the United States . . . or of Mexico, or anyone else.

It was hot on the runway. The airport, rebuilt when the expansion began, was still too small; and there was a bewildering variety of temporary sheds. MacKenzie felt heat rising from the runway to meet the hot sun from above; in August the trade winds do not blow in La Paz. He saw the high-rising buildings, but he remembered another Baja and another La Paz. It was all long ago, and the boy and girl who had struggled over rutted dirt roads, dived in clean blue waters among crimson reefs and darting fish, camped under bright tropical stars—they were gone like the cobblestone streets.

"*Señor? Señor* MacKenzie?"

The man wore expensive clothing, and there was the bulge of a pistol beneath the embroidered shirt which hung loose below his belt. He displayed a badge: not the serpent and eagle of Mexico, but the design of Hansen Enterprises. Not far away were men in uniform and weapons belts, both the khaki

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of the Mexican police and the light blue of Hansen service. Aeneas smiled ruefully. Getting Mexican permission to have her own police on duty at La Paz airport must have taxed even Laurie Jo's ingenuity; but little she did surprised him now.

"The *Doña* Hansen regrets that she could not meet your aircraft, and asks that you come with me," his guide said. "She is inside the terminal." He led the way through Customs so quickly that Aeneas wasn't sure they had passed them; and that was strange, because now that *las turistas* were not Baja's only source of income, Americans were none too popular here.

The terminal was a maze of marble and concrete and wooden scaffolds and aproned workmen, art treasures and unfinished masonry blended in a potpourri of sights and smells like every expanding airport, but different. Aeneas wasn't sure how, the differences were subtle, but they were there: in the attitudes and postures of the workmen, in the quality of the work, even the smells of the paint.

Pride, Aeneas thought. *They have pride in what they are building. The nation has pride and so do these craftsmen; and we've lost all that.*

They went upstairs and through one of the unmarked doors that seem to be standard features at airports. Suddenly they were in a luxurious VIP lounge; and she was there.

Aeneas stood silently looking at her. Her hair was red now; it had been red when he knew her before, but most of her recent pictures showed her as a blonde. Not terribly pretty, but yes, more beautiful than she'd been when he knew her. Filled out. She'd always been very thin. She still was, but it was graceful now, and more feminine. Proper exercises and the most expensive clothes in the world wouldn't make a plain girl beautiful, but there were few women who wouldn't be improved by them.

He knew she was only two years younger than he was, but she looked ten years younger. Money had done that.

His guide stood embarrassed as they looked wordlessly at each other. "*Señor* MacKenzie, *Doña.* Or—he led me to believe he was the *Señor* MacKenzie." He put his hand very close to his pistol, and he eyed Aeneas warily.

Her laugh was as fresh as when they'd come out of the waters of Bahía Concepción to lie on the beach. "*'Stá bien, Miguel. Gracias.*"

Miguel looked from Aeneas to his *patrona,* and backed toward the door. "*Con su permisión, Doña . . .*"

She nodded and he left them alone in the elegant room. A jet thundered off the runway outside, but there was no sound here. There

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was nothing he could hear except his own heart, and the memory of her laugh erased sixteen years of defenses. The heart pounded loudly, and hearts can break, despite what surgeons say. Aeneas knew.

"Hello, Laurie Jo."

She moved toward him and he hoped she would come to him, prayed that she wouldn't—not again. It was long forgotten, and better so. "You wanted me, *Doña* Hansen?"

"I've always wanted you with me, Aeneas. I thought this time you'd burned so many bridges you'd have to come."

"And you were right. I've no place left."

"You should have stayed with me. What have you accomplished with your crusades?" She saw the pain in his eyes. "No. I didn't mean that. Will you believe me when I say that I wish I'd been wrong? I've always wished I'd been wrong about Greg Tolland." She turned and swept a hand around the paneled room. "I'm forgetting my manners. Is there anything I can get you? A drink? You—I wish you wouldn't stand there with that suitcase."

So she remembered that too. That was how he'd stood the last time; but it hadn't been in an ornately paneled room with deep carpets, only the cheap student apartment in Los Angeles that they'd shared. And how does she remember those days, when she wasn't *Doña Hansen,* and we sang and made love and hitchhiked around the country? . . . "What did you have in mind, Laurie Jo? What does Hansen Enterprises have for me?"

"Anything, Aeneas. Anything you'll take."

And she meant it, he knew. But the offer wasn't as generous as it seemed: she wouldn't attach any strings, but his demon would. It was the only public story about him that was completely true: Aeneas MacKenzie, the man who never accepted a job he wouldn't do, the single-minded robot who'd sacrifice everything to duty . . .

"If you don't want a drink, we should be leaving," she said. "We're due in Cabo San Lucas in three hours, and that's two hundred kilometers . . . but you know that."

"I know that."

It was all changed. There had been a paved road south from La Paz to Cabo San Lucas for as long as Aeneas could remember, but it had been the only one in lower Baja; now there were dozens. The city of Todos los Santos was sending tentacles into the surrounding hills, and there were no longer burros on dirt roads; now, huge trucks loaded with agricultural products roared past.

"But there are still horses," Laurie Jo told him. "Horses with

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great leather saddles and silver trim, and the *vaqueros* ride them proudly . . . remember when we thought how grand it would be if every rancher had a fine horse and saddle? Now they all do."

"And you did that."

"And I did that."

But at what a cost, Aeneas said silently. What price a proud and honest culture? A way of life? But it was a way of life that included disease and early death, children carrying well water in buckets because there wasn't enough money for piping and pumps, and the withe and mud houses with palm thatch roofs were very quaint and kind to the ecology, but they didn't keep the bugs from gnawing the children at night . . .

Now those were gone. Concrete block, poured concrete, aluminum roofs, floors of concrete and not dirt, screen doors—they had come to Baja. And the children sang in the schoolyards, and they were healthy, and the land was dying as land always dies when desert is irrigated.

"They're mining the soil, Laurie Jo. It can't last, and you know it."

She nodded. They drove smoothly on black pavement past straight green furrows of cotton and soybeans; once they had come here in a Jeep, and the land had been chaparral and sentinel cactus and incredibly thin cattle whose bones jutted out as if they were dying, but they weren't, they were a hardy breed who could live on the scrub brush . . . "It can't last, but *something* can. We've brought hope and progress, and we'll see that—" but she couldn't finish and he knew why. There was no cure for dead soil but time; and these people's grandchildren would live among strangers. Not even Hansen Enterprises could keep Baja fertile for more than a few generations.

"Remember this grade?" she asked. Miguel drove the big Cadillac smoothly so that it hardly faltered; but they had babied the Jeep up that rocky hill with its interminable switchbacks, some so narrow that the rear of the car hung far out over the edge as they reversed to ease around the sharp turns.

At the top of the rise they saw the end of Baja laid out like a map: the gray Pacific to their right, and beyond land's end a sharp line where the Pacific waters met the bright blue of the Sea of Cortez. Hills along the shore, and the red tile and palm trees of resort hotels everywhere, green oases on the sandy beaches.

The town of Cabo San Lucas was at the very tip of the peninsula: just beyond it were high rocky hills, and over them the stormy Pacific. The hills curled around a bay that had once been so lovely Aeneas had cried when he saw it.

He could cry again: the bay was choked with ships, and the pueblo

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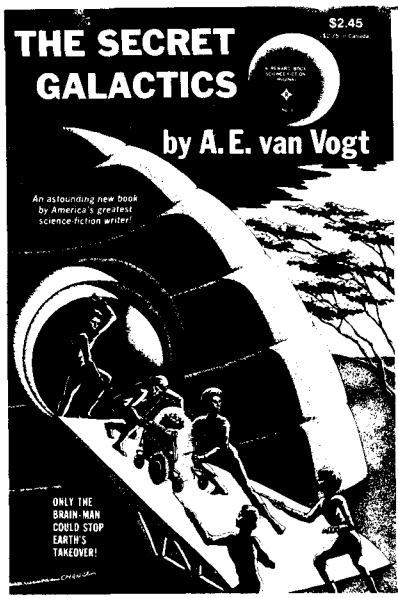
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was gone, replaced by rows of town-houses, high bay industrial sheds, a city with the heart and soul of Los Angeles in its days of frantic expansion. And north of Cabo, along the Pacific shore where the water came in cool and clear, were the reactors: domes fifty meters high, twelve of them, each with its attendant blockhouses and power plants and seawater ponds where the chemicals of the sea were extracted. There was a vast jungle of insulators and spidery cube towers and finned transformers spewing forth a web of thick cables leading to a line of transmission towers marching inland and northward toward La Paz and ultimately the whole sixteen hundred kilometers to the energy-starved United States.

Laurie Jo moved her head in a sidewise jerk, a peculiar tic to her left ear. She'd done that before, and she saw Aeneas looking at her curiously. "Implant," she said. "I was asking for the time. Miguel, take us to the observation tower."

"Sí, Doña."

"I hadn't known," said Aeneas. "But I should have guessed. How do you ask questions?"

"I have to set them in advance. The transmitter has only a few signals." She indicated a little console in her purse, and a panel at her side in the car. The panel swung down to reveal a computer input console. "My implant is keyed to

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these, and there's a data link from the car to any of my plants. I've asked them when the next scheduled launchings are, and we're just in time. You've never seen one?"

"Not live." He wanted to think about what she'd told him. The implants weren't common—at over a million dollars each, they wouldn't be. A little transceiver, wired directly into the nervous system, a short-range computer link. Provided that she could set up her questions in advance or had access to a console—the one in her purse was very small and could be manipulated without anyone seeing it—Laurie Jo could know everything known to the largest computer net on Earth.

She could ask it to solve any equation, look up any dossier, find the commercial strength of any company, and hear the output directly and silently. "That must be useful at board meetings," said Aeneas.

"Yes. Most of my colleagues don't know about it. Will you keep my secret?"

"Of course."

"And my other secrets? If I show you everything, will—will you use it again? Or are your crusades against me ended?" Her eyes were very blue and she was very close; and Aeneas knew what she was doing. She had deliberately driven him over a route they'd taken seventeen years ago, and she'd done her hair the way she had then. The linen suit she now wore wasn't like the jeans and chambray shirt of years past, and she'd never again have the eyes that Laurie Jo Preston had; Laurie Jo Hansen had seen too much. But she could try.

"What would be the point?" Aeneas asked. "I won my crusade. We liberated Jerusalem." And it had been as it must have been for a true knight of the Middle Ages: how could he rejoice when he saw his comrades wade in blood to the altar of the Prince of Peace? When he saw the Chivalry of the West grubbing for lands in the Kingdom of Jerusalem? "I no longer have weapons to fight you with."

"It's not enough. Aeneas, I want you to look at what I've done. I want you to see the choices I have. The *real* choices, not the theoretical ones. And when you've seen all that, I want you to join me. But I can't even try to convince you unless—Aeneas, I owe it to my colleagues not to bring a spy into their councils."

"I see." And he did see. She had always been as certain that she was right as he'd been convinced that her way was wrong; and his way had fallen. He had no duties. The thought broke over him like one of the great gray curling rollers from the Pacific. *I have no duties.* It made him feel alone and uneasy. "I promise. Your secrets are safe."

"No matter what you see? And no matter what you decide?"

"Yes." And that was that, as they

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both knew. Aeneas cursed himself for allowing his emotions to betray him . . . but she was Laurie Jo, and she couldn't have changed that much. She couldn't.

God, let me be able to join her. Let it always be like this. Because the last two hours have been the happiest I've had in sixteen years.

The tower overlooked a valley ringed by low hills. A forest of *cardonas,* the great sentinel cactus, marched down the sides of the hills to the leveled plain below. Rail lines and huge electric cables snaked through at either end; the plain was filled with concrete blockhouses where the power cables terminated. At the end of each blockhouse was a flat mirror a meter in diameter, and they all pointed toward the installation below them where streamlined cylinders squatted on railroad cars.

The spacecraft were two meters in diameter and five times that tall, and as they waited in neat lines for their turn they reminded Aeneas of machinegun ammunition grown swollen and pregnant; but their progeny was not war.

Everyone in the tower had been politely respectful, but harried; now they had no time for visitors. Hansen Enterprises carried no dead weight. There were no explainers, not even when the owner came to watch the operations; perhaps especially when Laurie Jo Hansen was present. Aeneas and Laurie Jo were alone in a small glass-enclosed room, while below a dozen hard-eyed young men sat at consoles.

A clock ticked off the seconds. "We have to be very precise," she told him. "The MHD engines give us half the power we need, but we have to draw the rest directly from the line. There'll be dimouts all over Baja."

"And it costs," Aeneas said.

"Yes. Three thousand megawatts for an hour. At five cents a kilowatt hour . . ."

"But you get part of the power directly."

"From burning hydrogen in old rocket engines and sending it through an MHD system. Yes. But the hydrogen and oxygen have to be made. That part of the operation is less efficient than just taking the power from the line, but we have to do it. We can't take everything off the line when we launch." She looked fondly at the capsules below. "We get a lot for my hundred and fifty thousand dollars, Aeneas. Eighty tons go into orbit in the next hour . . ."

The first of the capsules moved over the embankment enclosing the launch area. A roar from beyond the low hills signaled the beginning of the rocket engines: giant engines, but they lay on their sides, their exhaust directed down ceramic tubes protecting superconducting coils that drew power directly from the hot gases . . .

Aeneas couldn't see the launch-

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ing mirror below the capsule, but suddenly the spacecraft rose and there was a blinding green beam, a solid rod of light over a meter thick extending from the capsule to the ground. The sound rolled past: two hundred and fifty explosions each second as the laser expanded the air in the parabolic chamber below the capsule, and the air rushed out to propel it upward. The two hundred and fifty cycle note was oddly musical, but very loud at first, then dying away. The spacecraft soon vanished, but the light stayed on for half a minute, tracking the capsule; then it vanished as well.

The mirrors at each blockhouse pivoted slightly, and a second capsule rose from another launch station. The green light tore through roiled air and there was a humming roar that vibrated the glass of the observation room until the spacecraft was gone and there was only the silent power of the green light. In the half minute that the second capsule absorbed power, a new spacecraft had been placed on the first launch station. The mirrors pivoted again, and it rose; then another, and another.

The laser launchings had been impressive on TV; live they were unbelievable. The long lines of capsules moved toward the Earth and concrete emplacements protecting the launching mirror; they reached them; and seconds later, each capsule vanished at thirty G's, shoved upward by a meter-thick column that was nothing more than light, but which looked like a great green growing plant . . .

"About a thousand kilograms each?" Aeneas asked.

"Exactly a thousand kilos total weight," she said. "We lose fifty kilos of ablating material. The rest goes into orbit, and that's all payload. Any mass is payload. That's what we need up there, Aeneas, mass, any mass—metal, fuel, gases, tankage, even human wastes. We can convert and modify if we have something to start with."

"And you can launch eighty thousand kilos in one hour . . ."

"Yes. We lose some. Each one of those capsules has to be picked up, somehow. That costs mass. We guide some into rendezvous with *Heimdall*, but they have to go after most. Still it's cheaper this way—once we start launching, the power scheduling's such that it's better to go on for a full hour."

The lines of capsules had ended; now new ones were brought up. These were longer and slimmer than the others; and when they took their places over the launching mirrors, they rose more slowly.

"Ten G's," she said. "Crew capsules. Ten G's for a minute and a half."

"Isn't that close to human tolerance?"

"Not really." Her voice was cold and distant. "I took it. And if I can—"

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He finished the thought for her. "Hansen Enterprises employees will damn well have to. Or starve."

"I want no one who goes only for the money."

They watched the three personnel capsules rise; then the trains brought up more of the unmanned thirty-G cargo capsules, and the pregnant machinegun began again. "And this was what it was all for. *Your* crusade," he said.

Her smile was wistful, full of triumph and regret. "Yes. I'm not proud of all I've done, Aeneas. You've seen La Paz. Todos los Santos. Cabo. Ugly, not what they were when we—not what they were. But the men in Cabo don't go to the mainland looking for work while their families starve. I've done that."

"Yes. You've done that."

"But it was all only fallout, Aeneas. *This* is what it was for. *Heimdall.* The rainbow bridge to the stars! And by God it was worth it! You haven't seen the station, Aeneas. And I want you to."

He said nothing, but he looked out at the launching field. The lasers were off now. The great crippled rocket engines were silent. The power from the reactors was back on line, fed to the Baja industries, to Southern California; to the pumps even now cooling the laser installations. To the water-makers that made Baja fertile, for a while. But all that was incidental, because she hadn't lost the dream they'd shared, a dream she'd learned from him in his anger when America retreated from adventure . . .

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She hadn't lost it. He thought he had, once. Not entirely; but he'd been willing to sacrifice it to a larger dream.

Yet what dream was larger than a bridge to the stars?

"And now what?" he asked.

"You've seen what I've done. You don't know what I do to keep it."

"And?"

"And when you do—when you know everything that's happened in the last sixteen years—we'll talk. Not until then." And her eyes were on his, and he saw the hunger and

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the loneliness and he prayed to a God he'd half forgotten that it wasn't just a reflection of his own.

They flew high over the Pacific. There were no luxuries in this aircraft; Aeneas and Laurie Jo sat uncomfortably in bucket seats over the wing, and Miguel sat far behind them. Neither the pilot nor the air crew paid them any attention. The pilot was not pleased to have them aboard, no matter that the plane belonged to Laurie Jo Hansen.

Two armed jets flew high above them. They bore the markings of Hansen Enterprises, and were registered in Mexico; and the bribes required to keep permission for a private air force were as staggering as the cost of operating them.

"Why?" Aeneas asked, pointing to the slim black delta shapes above.

"Pirates," she said. "Each capsule holds a thousand kilos of cargo." She took papers from her briefcase and handed them to him. "Computer chips, four thousand dollars a kilo. Water-maker membranes, six thousand dollars a kilo if we'd sell them. We won't until we've enough for ourselves. Concentrated vitamins, forty-five thousand dollars a kilo. And other things. Chemicals, vaccines. Some not for sale at any price."

The value of each capsule in the current drop was nearly seven million dollars. Even in these inflated times that was enough money to make a man wealthy for life. And there would be no problem selling the cargo . . . "But how would pirates find them?" he asked. "You can bring them down anywhere in the world."

"They can be tracked. So can my recovery planes. The NORAD radar system watches us very closely . . ."

"But they don't give information to pirates! Not any more! I put a stop to that sort of thing!"

"Did you, Aeneas? For a while, after Greg became President, the losses stopped; but they started again. Do you want proof?"

"No." She'd never lied to him. "How long have you had proof? Why didn't you tell someone?"

"Who'd listen? Greg Tolland is President of the United States."

"Why didn't you tell me?"

She was silent for a long time. There was only the thunder of the jet, and the chatter of the crew as they watched for the cargo capsules to parachute down from orbit. Finally: "What would I have been to you if I'd given you the proof about Greg, Aeneas? If I'd done that, I'd have lost you forever."

And the White House itself had become the abattoir of his dreams . . . "We fought you, Laurie Jo. I fought you. I think it gave Greg a perverted satisfaction to have me as his general against you. But—was he right? Laurie Jo, should power like yours exist?"

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"Without power, none of this would happen. You can't do anything without power."

"Yes." They'd been through it before, endlessly. "But it must be responsible power! It must be directed for—"

"For what, Aeneas? Something trite, like 'the betterment of mankind'? Who chooses the goals? And how do you see the choice is kept, once made? Responsible, Aeneas? To the people? You tried that."

And that was the new thing in their eternal argument. Before, there had always been Greg Tolland and his People's Alliance. There had been the hope that power would be controlled. Could be controlled.

"Greg was right, you know," she said. "Power like mine can't be neutral. It must be used or it dissipates. He assumed that because I wasn't with him, I was against him—and he was right."

"Or made himself right—" The plane banked sharply and there were shouts. They ducked low to see out forward between the pilots; and far ahead was an orange billow in the sky.

The plane moved swiftly. Hatches opened behind them, and a hook on a long cable trailed out. It caught the shrouds with a jolt perceptible even in that large ship; then the motors sang as the cable was reeled in.

The plane banked onto a new course toward the next parachute. There would be five in all.

"We don't dare miss," she said. "If one of them falls into the sea, there'll be swarms of ships and planes out to get it, and we can't do anything about it. Salvage, the courts call it."

"My doing. It seemed right at the time. I—the enemy was Hansen Enterprises, not you. But why the fighters?"

"To keep this plane from being shot down. There's too little time for the Equity people to get to the capsules before we do. They don't know when and where they're coming down until the retros fire. But there's enough time to intercept my recovery planes."

Her voice was without drama, but Aeneas was startled. "Who flies the interceptors, Laurie Jo?"

"They don't have any markings. Somehow the ships that salvage my wrecked planes always belong to Equity or one of their dummies; but the interceptors are unmarked. I doubt they'll bother this time. We're close to Mexico, and the cargo's only worth thirty-five million."

Only thirty-five million. Not so very much to Hansen Enterprises. But more than enough to buy souls. Most had a far lower price. "And NORAD tells them where to look?"

"Sometimes. Other governments too. Greg Tolland will help any enemy of mine. Look at the situ-

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ation with Peru and Ecuador. They steal my cargoes with the help of the United States." She was bitter now. The national claims to space above and water beyond the small countries her satellites and cargo drops passed through had been rejected by every international authority: until Greg Tolland had used the power of the United States. "It would have been different if I'd stayed with you."

How different, he wondered. Sixteen years ago: she'd been Laurie Jo Preston, then. An orphaned girl, with memories of her mother living far beyond the income she made as a night-club entertainer. And her mother had died, and Laurie Jo knew only a succession of governesses paid by bankers; and a trust fund that dictated what schools she would attend, what courses she would take. At first the bankers ruled her life; but they interfered with her very little after she was sixteen.

They'd met at UCLA, the shy girl with her mysterious bankers and no parentage; Aeneas, already consumed with the demon that drove him to change the world; and Greg Tolland, a young California Congressman with a political heritage that might some day take him to the White House, if he could keep his seat in Congress.

At first, Greg Tolland had worked very hard for his election; but after Aeneas MacKenzie became his field deputy and manager, Tolland did not need to campaign any longer. They had won their second election together when Laurie Jo came into Aeneas' life.

Two years. Two years she'd lived with Aeneas. The bankers didn't care. No one did. They traveled, and sang, and drank too much, and made love too little, and one day the bankers came to say that her name was Hansen, not Preston, and to tell her she had inherited control of the greatest fiscal empire on Earth.

Aeneas had gasped at the size of her fortune. All through the day they'd sat at the battered kitchen table of his apartment and looked at the marvels she owned. Greg Tolland flew back from Washington to join them: and came the disaster.

"It must be broken up, of course," Aeneas had said. "It's exactly what's wrong with the world—irresponsible power like that. Economic imperialism."

"I'm not so sure," Greg Tolland had said. "Think of what we can do with a fortune like that. What the People's Alliance can do. Aeneas is right, it's too much power; but we shouldn't be too hasty in deciding."

"I won't be," Laurie Jo said. They looked at her in surprise. "I don't understand what power like this means; but before I use it, I will."

That was the beginning. Greg

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Tolland saw her fortune as the ladder to shortcut the long road to the White House. Aeneas saw it as the kind of power no person should have. Laurie Jo Preston had no opinions. She'd always agreed with Aeneas. But Laurie Jo Hansen was otherwise.

"Greg only despises power he can't control," she said later. "He'll let me keep mine to use for him. No. I won't break up Hansen Enterprises, and I won't help Greg Tolland gather all power into government."

"Where it will be used for the people!" Aeneas protested.

"Where it will be used. How is not as obvious as that it would exist."

"What do you mean?"

"You want to build something so powerful that nothing can oppose it, and hand it over to Greg Tolland. Aeneas, I've always thought you could do that. I've never laughed at your abilities. And I've been terrified every day that you'd succeed."

"You've helped me!"

"Yes. I love you. And I've told myself that by staying with you, I'd have some control over what you two will do when you've won. Now I've got something more substantial."

"You'll fight Greg?"

"No. Unless he deserves it. But I won't help him, either."

And then had come the terrible words. That she saw things differently now that she was rich. That she'd got hers, and to hell with their dreams . . .

The plane banked sharply, bringing him from his reverie. "You chose Greg Tolland," she said. "I couldn't."

He shook his head. "I chose—what? My country? I always thought so." And how must the true knights have felt when their crusade succeeded, and they saw the actuality, not the dreams? Was it true that some went to the Saracens because they had no place else to go?

When the plane landed near Cabo San Lucas, Miguel drove them to the Hansen hacienda. He

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seemed to go everywhere with Laurie Jo. Inside she said, "Miguel is nearly the only man I trust. He guards me well."

"Con mi vida, Doña."

"You will protect this man the same way."

"Sí, Doña."

She left, and they stood in the low-ceilinged library, Aeneas and Miguel, and Aeneas looked at him for the first time. He seemed vaguely familiar, but he looked like any Baja rancher with an ageless, lined face that could be forty or sixty.

"Welcome, *Don* Aeneas," Miguel said.

Aeneas frowned. "I ask for no titles."

"Those who ask do not often deserve them. It would be enough that *Doña* Hansen says you are a good man; but I have reason to know. You do not remember me, *Don* Aeneas."

"No."

"It was here. Within a kilometer. You gave me a shotgun."

"Oh--the *vaquero.* You helped us with the Jeep."

"Sí. You never returned. There was no reason why you should. But *Doña* Hansen came here the year after you left, and I have been with her ever since."

"And why the titles?"

Miguel shrugged. "I prefer to serve those I believe may deserve them. I have no education, *Don* Aeneas. I am not a man who benefits from schools. But my sons will never row boats for drunken Americans."

"I see."

"I hope you see. My sons tell me I am a peasant, and they are right. They will not be peasants, and I am happy for them. I hope they will be as happy in their work as I am."

"I of all people should understand, Miguel." Aeneas found the bar and poured a tall drink for himself. Miguel accepted beer. They drank deeply. "She does many things she cannot be proud of?" Aeneas asked.

Miguel spread his hands. "You must ask her."

"I have."

Another shrug. "Some men take pride in acts that make others die of shame. Power like hers must not be judged by men like me."

"But it must be!" Aeneas shouted.

Miguel shrugged and said nothing.

The weeks passed. Aeneas learned that Hansen Enterprises reached places even he'd never suspected. Mines, factories, shipping--everywhere she was entangled with other international firms in enterprises so scattered that no one could ever understand them all. Most were operated by managers, and she saw only summaries of results; and even those took time she barely had.

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"You'll kill yourself," Aeneas said.

"I don't work any harder than you did."

"No." *But I worked for—for what?* The memory of those years was slipping away from him. He recalled the fanatical young man he'd been, but he saw him almost as a stranger. *I have no duties,* he told himself. *I can relax.* But he could not. He buried himself in her reports.

"Why do you do it?" he asked another time. "Bribes to keep your mines open. Your agents block labor legislation, or bribe officials not to enforce the laws . . ."

"Do you think they are good laws? Do you like this fine net of regulations settling over the Earth?"

He had no answer to that. "Why do you do it?" he asked again. "You'll never need money. You couldn't spend what you have if you devoted your life to it."

"*Heimdall* absorbs everything . . ."

"It makes money too!"

"Does it?" she asked. "Barely. Aeneas, even I couldn't have built the power plants. I don't own them, I'm only part of a syndicate. Without the power plants we can't launch, and it takes nearly everything I make to keep up the interest payments on those power installations."

He looked closer at the reports, then, and saw that it was true. Between the power plants and the laser launchers there was so much capital investment that it wouldn't be paid off for fifty years. There were other places the syndicate could have invested its money, operations with a far higher immediate profit; and Laurie Jo had to make up the difference. If she ever failed, she'd lose control.

"Now do you see?" she asked. "In the long run, *Heimdall* has a greater potential than any investment ever made; but it took so much capital—"

"You're at the thin edge," Aeneas said wonderingly. "It wouldn't take much and you'd lose all this."

"Yes. I'd be a very rich lady; but I wouldn't be Laurie Jo Hansen any longer. I wouldn't have the power."

Without the power of Hansen Enterprises—what? "*Heimdall* would still exist. It's already profitable. It would ruin your partners to shut it down."

"Certainly. Or they can sell it. Who would you like to see have it, Aeneas? A hundred nations would like to own my bridge to the stars. The United States perhaps? The Equity Trust? Another company? It would be damned easy to get out from under all this and enjoy myself again!" She had become shrill; but whether because of regret at what she'd paid to hold this empire, or terror at the thought of losing it, Aeneas didn't know. He thought it was both.

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"There's more," she said. "You've seen the books."

"Yes. You're investing in expansions of *Heimdall*. Sending up mass instead of taking out profits."

She smiled. He hadn't spent long examining her accounts; but he hadn't disappointed her. "Have you wondered why I built the launching station in Baja?" she asked. "It wasn't just sentiment, or politics. We're on a Tropic—and that makes it easier to launch into an ecliptic orbit. Heimdall was the god who guarded the bridge to the stars, but my *Heimdall* will build one!"

He looked up in wonder. "Where are you sending them?" he asked.

"Not sending. Going. An interplanetary explorer ship. And a Moon colony. A Moon colony can be self-supporting. It can support exploration of the other planets. It will be free of Earth and everything here!"

"Even you don't have that much money."

"I will have. *Heimdall* will make it for me."

"But you're very near losing it. Your deliveries are behind schedule. Haven't you risked everything on some shaky technology?"

The terror crept around her eyes again, but her voice was firm. She had no regrets. "I had to. And it wasn't technology that failed me. Aeneas, how do you keep discipline in space?"

"I never thought about it—how does any company control workers? Hire people who like the work, and pay them well to do it."

"And if someone pays agents to sabotage your factories? There are no laws in space, Aeneas. Captain Shorey has managed to keep things under control, but only barely. Most of our people are loyal—but some others slip through, and the worst we can do to them is send them down without pay. Suppose they've been offered higher pay to make mistakes aboard *Heimdall*? What can I do to them? Mexican courts won't prosecute non-Mexicans for crimes in space. American courts won't prosecute at all without trials and witnesses—if I have to send half a crew down to sit around a courtroom for years, I'm ruined anyway."

She came to the window next to him and looked out into the night. "But we're winning. We will win. *Heimdall. Valkyrie.* The Moon and planets, Aeneas. And now you know it all."

They were in the hacienda atop Finisterre, the rocky hills overlooking the town of Cabo San Lucas. On one side were the lights of the town; on the other, gray water with flashing fluorescent whitecaps. Ships moved in the harbor even this late at night, and factory lights were ablaze below.

Out beyond, in the dark of the inland hills, a green light stabbed upward; more capsules fired into orbit, raw materials for the factories in the satellite, structural mate-

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rials for expansion, fuel, oxygen, the expendables that ate so much profit despite recycling. The sun was long over the horizon and *Heimdall* wouldn't be visible; but it would be coming overhead. The supply pods were always placed as close to the satellite as her engineers dared.

"It's time for our talk, then," Aeneas said. "Is there anything to talk about? You're what I've opposed all my life."

"Yes. But you love me. And if you fight me—who are you fighting *for*?"

He didn't answer.

"I love you, Aeneas. I always have, and you've always known it. Tell me what to do."

"Will you—would you throw all this away if I asked you to?"

"I don't know. Will you ask it? Remember, Aeneas. You can't destroy power. You can fragment mine, but someone else will move into the vacuum. Power doesn't vanish."

"No." And she had a dream. A dream that had been his.

"You don't trust me with all this. Would you trust yourself?"

"No."

"Then someone else. Who?"

"No one, of course."

There was no change in her pose or voice, but he sensed triumph. "Then tell me what I should do," she said.

This time she meant it. He felt that whatever he said, she'd do. She knew him well. She was taking no chances, because she knew what he must say. Forty billion dollars was ten dollars for every human on Earth—or the key to the planets. "I can't."

"Then join me. I need you."

"Yes."

There were no longer barriers, and sixteen years vanished as if they'd never been.

For a week there were only the two of them—and Miguel, silent, invisibly near. They slipped away from Cabo San Lucas and its power plants and factories, to find still lonely beaches where they swam to brilliant coral reefs. Afterwards they made love on the sand and desperately tried to forget the years they'd wasted.

One week and a little more; and then the phones in the camper buzzed insistently and they had to return.

She told him what she could as they drove back. "Captain Shorey has been all the authority I have up there," she said. "The station depends on the ground launching system to survive, but there's nothing I can do to control it."

"You think there's mutiny on *Heimdall*?" Aeneas asked incredulously.

"I don't know. I only know Shorey is dead, and Herman Eliot says he can't meet the manufacturing schedule. Without the finished goods from the station I can't pay the syndicate. I'll lose *Heimdall*."

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There would be any number of people who might benefit from that. With over a hundred men and women in space, the odds were good that several organizations had agents aboard the satellite factory complex. "How do you select crew for *Heimdall*?" Aeneas asked.

The Jeep camper bounced across rutted roads toward the main highway. Ten kilometers ahead they'd meet a helicopter.

"I try to pick them myself," she said. "The pay is good, of course. Almost two hundred thousand dollars at the end of a two-year tour in space. We have plenty of volunteers, but not just for the money. I choose generalists, adaptable people, and I try to keep a balance between the intellectuals and factory people. There's a lot of construction work, and production runs mean repetitive labor that bores the big brains—I also look for people who might want to go on to the Moon colony, or be crew aboard *Valkyrie*. So far it's worked, but Captain Shorey was the key to it. Now he's gone."

"Tell me about Herman Eliot."

"He's been second in command. A technical genius. He's in charge of production and research."

"Do you think he's loyal to you?"

"I'm almost sure of it. He wants to go with *Valkyrie*. But he didn't tell the ground station much; maybe he'll tell me directly. Aeneas, if I don't keep the manufacturing schedule I'll lose the station and everything else!" She was near panic; and he'd never seen her frightened before. It upset him more than he'd thought possible.

The Jeep bounced through a dust bowl laced with a myriad of ruts. Wind blew a torrent of fine powder across the windshield, and Miguel had to start the wipers to remove it. The dust ran like rivulets of water.

Dr. Herman Eliot was nervous. It came through in his voice as he reported to Laurie Jo. "We have a nasty situation up here, Miss Hansen. Captain Shorey was murdered and the crew know it. There's been sabotage all along, now this. Some of the engineers are saying that the Equity Trust is going to gain control of this satellite, and they'll remember who their friends were. There's even talk that people who won't help the Equity cause will be stranded, or have accidents on reentry."

"Tell them Equity will never control *Heimdall!*" Laurie Jo shouted into the microphone.

"I can tell them, but will they believe it? I repeat, Miss Hansen, Captain Shorey was murdered, and we all know there's no chance the killer will be punished. Who's next?"

"Do you know who did it?"

"I'm fairly sure it was an engineer named Martin Holloway."

"If you know he killed the cap-

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tain, why don't you do something?" Laurie Jo demanded.

"Do what? I'm no policeman. Suppose we put Holloway in arrest. Then what? We have no jails here, and there's no court that will take jurisdiction over him. I doubt he was the only man involved in this. What if he won't go when I order him down? It could start a mutiny. The crew thinks Equity will gain control here; nobody wants that, but there aren't many who'll risk their necks for a lost cause."

"If you meet the delivery schedules, I keep *Heimdall*! Don't they know that?"

"If you were only fighting the Equity Trust, Miss Hansen, we could believe you'd win. But not against the United States as well."

She was silent for a long time. Since the United States had thrown away her investments in space, or had them stolen and sold out by corruption, *Heimdall* had been the key to regaining that position . . . "Will you try?" she asked.

"I'll do what I can," Eliot said. The speaker went dead.

Tears welled at the corners of Laurie Jo's eyes, but her voice was firm. "I'll go up there myself with a squad of company police!"

Aeneas shook his head. "If things are that bad, they won't even meet your capsule; you can't afford to provoke an open break. Besides, you have to stay here. No one else can control your partners. With you out and away up there you'd certainly lose the station . . ."

"Then what will I do?"

Aeneas drew in a deep breath and let it out slowly. It was time to repay the Saracens for their hospitality . . . "Send for Holloway's file, to begin with. Let's see who we're up against."

He took out the photographs of Martin Holloway as Laurie Jo began to read. "Five feet eleven inches, a hundred and seventy-five pounds, hair brown, eyes green, graduated from—"

"It will be lies," Aeneas said. "His name is David Hindler."

"You know him?" Laurie Jo asked.

Aeneas smiled wistfully. "Long ago. Before Greg was President. You remember that Greg's enemies tried to have him killed . . . David was very valuable then. He saved my life." *And I his; we have no debts to each other.* But once there was a bond . . . "Dr. Eliot implies that the Equity Trust is behind your difficulties. David is Greg Tolland's man. He wouldn't kill for anyone else."

She said nothing, but there was concern in her eyes; not hatred for Tolland, although that was deserved; but sorrow because she knew the pain Aeneas must now feel. He could never convince himself that Greg Tolland hadn't known . . .

"Have your people make me a space suit and whatever else I'll need," Aeneas said.

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Hope came to her—then it was gone. "You've never been in space. How can you stay alive there?"

"I'm a careful man, Laurie Jo. And I think I see what must be done."

"But I just found you again! It isn't fair, not so soon."

"I'll be back," he promised. "You've always meant to go out with *Valkyrie*. How can I go with you without experience? Have you anyone else you can trust with this?"

"No."

"I'll be back. Soon."

Ten gravities for ninety seconds is easily within the tolerance of a healthy man; but Aeneas had no wish to prolong the experience. He was laid flat on his back in a nylon web, encased in baggy reflective coverall and under that a tight garment resembling a diver's wet-suit. The neck-seal and helmet were uncomfortable, and it was an effort to exhale against the higher pressures in the helmet.

He had thought waiting for the launch the most unpleasant experience he'd ever had: lying awkwardly on his back, with no control of his destiny, enclosed in steel; then the laser cut in.

He weighed far too much. His guts ached. Like the worst case of indigestion imaginable, he thought. There was no way to estimate the time. He tried counting but it was too difficult, and he lost count somewhere. Surely he had been at eighty seconds? He started over again.

There was noise, the loud, almost musical two hundred and fifty cycle tone of the explosions produced as the laser heated the air in the chamber under him—how close? he wondered. That great stabbing beam that could slice through metal aimed directly at him; he squirmed against the high gravity, and the effort was torture.

The noises changed. The explosion tone drifted down the scale. He was beyond the atmosphere, and the laser was boiling off material from the thrust chamber, reaching closer and closer to him—

Silence. The crushing weight was gone. He was falling endlessly, with no way to know. Was he in orbit? Or was he plunging downward to his doom? He closed his eyes to wait, and then he felt he was truly falling, with the sick sensations of a boat in motion—he opened his eyes again to orient himself in the capsule.

Will they pick me up? There was no reason they shouldn't. New crewmen arrived weekly, and he was merely another. He listened for a voice, a signal, anything—

"Hullo, laddie. All right in there?"

Aeneas grabbed for the microphone and pressed the talk switch. "That was one hell of a ride." He fought for control of his voice. "I think I'm all right now."

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"Except that you feel like letting the world's record fart, right?" the voice said. "Go ahead. You'll feel better."

He tried it. It helped.

"Hang on there, mate. Be alongside in a minute," the voice said. It took less than that. There were clunks and thuds, and the capsule jarred with some impact. "Right-o. You're new in this game, they tell me."

"Yes. Very," Aeneas replied.

"Right. So we'll start by testing your suit. I've got a bottle attached to the outlet, crack the atmosphere evac valve a half turn, there's a good chap."

A short moment of panic. The capsule held half an atmosphere. When the capsule was evacuated, only his helmet above the neck seal would contain pressure. The tight garment he wore was supposed to reinforce his own skin so that it would be able to hold the pressure differences, and it had worked in the ground training chamber; but there had been physicians waiting there—Aeneas did as he was told. As the air hissed out, the pressure in his guts returned, but worse.

"Fart again, lad. How's the breathing?"

"All right." He carried out the instruction. Again it helped. It was hard work to breathe out, but there didn't seem to be any problems.

"Good. Open the valve the rest of the way and let's get you out of there." Pumps whirred, and he felt more sensations of internal pressure. The wet-suit was very tight around every part of his body. His heart pounded loudly, and he felt dizzy.

"Now unstrap and open the hatch."

The steel trap around him seemed comfortable and safe compared to what he might find outside. Aeneas gingerly unfastened the straps that held him to the D-frame webbed bunk, and immediately floated free. It took longer than he had thought it would to orient himself and get his feet braced so that he could turn the latches on the hatchway, but Aeneas was surprised to find that he had no trouble thinking of what had been the capsule "wall" as now "down" and the hatchway as "up." The falling sensation vanished as soon as there was something to do.

The man outside hadn't mentioned the tether line on its reel on his belt, but the ground briefing had stressed that before the hatch was opened he should clip the tether to the ring by the hatchway. That took fumbling, but he managed it.

The hatch opened smoothly and he put his head outside. There was brilliant sunshine everywhere, and he was thankful for the sun visor and tinted faceplate of his helmet. Crisp shadows, Earth an enormous bulging circular mass of white clouds and blue sea, not below but

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just there; stars brilliant when he looked away from Earth and sun . . . he had seen the pictures a thousand times. It wasn't the same at all.

He used his hands to rotate himself. There was an odd vehicle about seven meters long at the aft end of the capsule. Its nose was shoved into the capsule thrust chamber, and it reminded Aeneas of dogs. An open framework of thin aluminum bars with—saddles? But why not? A mirrored helmet atop bulky metallic shining coveralls perched on the nearest saddle. Aeneas couldn't see a face inside it.

"One of the ones who listen, eh?" the voice said. "Jolly good. Now you see that line above you?" Aeneas looked up and saw an ordinary nylon rope. It seemed to be a solid rod. "Get hold of it and clip it on your belt. After that, reach inside and unclip your own line. And don't be slow about it." There was a pleasant note to the voice, but it expected to be obeyed.

Aeneas complied quickly. He was reeled very slowly toward the spindly personnel carrier, and with a lot of difficulty and help from the pilot managed to get astride one of the saddles. His feet slipped easily under loops in the thing's "floor"—Aeneas supplied the quotation marks because there was only a minuscule grillwork there—and a safety harness went around his waist.

Now that he was in the carrier, he could look around, and he did unashamedly.

The launch crew had cut it pretty fine, Aeneas told himself. *Heimdall* floated less than a kilometer away.

It looked like a junkyard. Two large curved cylindrical sausages on the ends of cables rotated around each other at a distance of nearly half a kilometer. The sausages had projections at crazy angles: solar cell arrays, shields, heat dissipation projectors connected to the station by piping, antennae. There was an inflated tube running from each cylinder to an amorphous blob between them, and part of the center structure rotated with the cylinders. Most of the center did not rotate.

Other junk—the pregnant machinegun bullet shapes of supply capsules, cylinders of all sizes, inflated structures of no recognizable shape—floated without apparent attachment near the axis of spin. Solar panels and orange sunshades lay everywhere. *Heimdall* had no real form.

"Quite a sight, isn't it?" his companion said. "Name's Kit Penrose, old chap. Officer in charge of everything else. Weight control, atmosphere recycling, support systems, all the marvy things like that. Also the taxi driver. Who're you?"

"MacKenzie."

"Oh, Christ, a bloody Scot. You don't sound one. Engineer?"

Aeneas shrugged, realized the gesture couldn't be seen, and said,

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"Like you. Little of everything, I suppose. And I'm American."

"American, eh? Whoever or whatever you are, the ground crew seemed worried about you. Well, you're OK. Here we go." He did something to the panel in front of him and the spindly structure moved slowly toward the satellite. His capsule was still attached at the nose. "We'll just take this along, eh?" Penrose said.

"Yes, my kit's in there." *And I may need everything in it,* Aeneas thought.

It took a long time to cover the short distance to the station. Kittridge Penrose burned as little mass as possible. "Energy's cheap up here," he told Aeneas. He waved carelessly at the solar panels deployed everywhere, and at mirrors fifty meters across that floated near the station. The mirrors were aluminized mylar or something like it, very thin, supported by thin fiberglass wands to give them shape. "Plenty of energy. Not too much mass, though."

As they neared *Heimdall,* it looked even more like a floating junkyard. There was a large cage of wire netting floating a hundred meters from the hub, and it held everything: discarded cargo and personnel capsules, air tanks, crates and cylinders of every kind. It had no door except an inward pointing cone—an enormous fish trap, Aeneas thought. They headed for that, and when they reached it and killed their approach velocity, Penrose unfastened himself from the saddle and dived into Aeneas' capsule.

He emerged with two sealed cylindrical fiberglass containers of gear Aeneas had brought up, and clipped them to the wire net of the cage. He did the same with the spindly vehicle they'd crossed on, then did something that released the personnel capsule from its faintly obscene position on the taxi's nose. Penrose gripped the cage with one hand and strained to shove the discarded capsule with the other.

Nothing seemed to happen. Then the capsule moved, very slowly, down the tube into the cage; the motion was only barely apparent, but Penrose turned away. "Takes care of that. We'll have a crew come take it apart later. Now for you. I'll carry your luggage."

He reached down and pulled the safety line out of the reel on Aeneas' belt and clipped it to his own. "Now you're tethered to me, but if you drift off and I have to pull you in, I'll charge extra for the ride. Follow me, and the trick is, *don't* move fast. Keep it slow and easy."

They pulled themselves across the wire cage. It looked like ordinary chicken wire to Aeneas, a sphere of it a hundred meters in diameter. There were other blobs of wire cage floating around the

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station. When they got to the side of the cage facing *Heimdall* Aeneas saw a thin line running from the cage to the nonrotating hub between the cylinders. Up close the rotating cylinders on their cables and inflated tunnel looked much larger than before: twenty meters in diameter, and made of segments, each segment at least twenty meters long. They pulled themselves gingerly along the tether line to an opening ahead.

There was no air in the part of the hub they entered. Penrose explained that the interface between rotating and nonrotating parts was kept in vacuum. Once inside Aeneas felt a gentle tug as the long tube leading to the capsules at the end of the tether line pushed against him until he was rotating with it.

Before Aeneas could ask, Penrose pointed up the tube away from the direction they were going. "*Counterweights up there*," he said. "We run them up and down to conserve angular momentum. Don't have to spend mass to adjust rotation every time somebody leaves or comes aboard. Course we have to use mass to stop *ourselves* rotating when we leave right now, but I've got an idea for a way to fix that too . . ."

As they descended Aeneas felt more weight; it increased steadily. They passed into the first of a series of multiple air locks. Then another, and another. "Hell of a lot easier than pumping all this gup every time," Penrose said. "Feel pressure now?"

"A little. It's easier to exhale."

"You could breathe here. Not well." They passed through another set of air locks and felt increasing weight; after that it was necessary to climb down a ladder. The walls of the silo they were descending were about three meters in diameter. They stood out stiffly from the pressure, and seemed to be made of the same rubberized cloth as his pressure suit, but not porous or permeable as his suit was.

Eventually they reached a final air lock, and below that the silo had metallic walls instead of the inflated nylon. The final air lock opened onto a circular staircase and they climbed down that into the cylindrical structure of the station itself.

Dr. Herman Eliot was a thin man, no more than thirty-five years old, with bifocals and long hair that curled at his neck; it was cut off short in front and at the sides so that it wouldn't get in his eyes, and it was uncombed: a thoroughly careless appearance. He had a harried expression, and his desk was littered with ledgers, papers, books, two pocket computers, and a dozen pencils. There were compartments in the desk for all that gear, but Eliot didn't use them.

Kit Penrose clucked his tongue as they entered. "Sloppy, Herman.

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Sloppy. Suppose I had to take spin off?"

Eliot looked annoyed. "You'd like to make up production schedules, then?" he demanded. He did not smile.

Penrose did. He recoiled in mock horror. "Easier to keep spin." He pulled off his helmet and turned to Aeneas. "Want some help with that?"

"Thank you." There had been little time for practice with the suit on Earth, but the procedure seemed simple enough; still, there was no harm in getting assistance. Aeneas worked slowly and carefully to undog the helmet and disconnect it from the neck-seal. He lifted it off.

Penrose stared. "MacKenzie, eh?" he said sourly. His friendly expression was gone, replaced by a mask of emotional control that couldn't conceal dislike. His voice was strained and overmodulated. "*Aeneas* MacKenzie. If you'd told me that, I'd have left you out there."

Aeneas said nothing.

"He is the owner's agent," Eliot said.

"I doubt it." Penrose curled his lip into a twisted sneer. "I never did believe that lot about his break with Tolland. I think he is another goddam CIA man."

"Then why would Miss Hansen send him?" Eliot asked. His voice and gestures were very precise, in contrast to the litter on his desk.

"Probably had to. Tolland can get to her partners. God knows what kind of deal he's made."

"I do not think anyone has ever accused Aeneas MacKenzie of personal corruption," Eliot said. "Precisely the opposite, in fact."

"I still think he belongs to Tolland." Penrose stalked to the door. "Tolland and MacKenzie tried to break Miss Hansen with legal tricks. That didn't work, so they're trying something else. I'll leave you with your little pet, Herman. Mind he doesn't bite you. And keep these doors closed." He swung the light-weight oval airtight door closed behind him.

There were chairs bolted to the deck opposite Eliot's desk. Aeneas sat in one of them. He felt a peculiar sensation each time he moved up or down, but he was growing accustomed to it. Experimentally he took a pencil from Eliot's desk and dropped it to the floor. It followed a lazy curved arc, and landed inches away from where his eye expected it to fall. He nodded to himself and turned to Dr. Eliot. "I don't bite," he said.

"That's about the only thing I know about you, then. Just what are you doing here, Mr. MacKenzie? You're no spaceman."

"Of course not. Was everyone here experienced in space when he first arrived?"

"No. But they had some technical value. We knew what they would do here."

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"I will learn whatever is needed." Aeneas spoke dogmatically. There had never been a task he had failed to learn if he had to know it. "I can help with your administrative work now."

"It's only make-work anyway. We aren't likely to last long enough to need work schedules." Eliot turned a pencil slowly in his fingers and gave Aeneas a searching look. "My instructions were to give you complete cooperation. What do you want?"

"You can begin by telling me how Captain Shorey died."

"How he was murdered, you mean." Eliot's face still showed little emotion, but he clenched the pencil in fingers suddenly gone white with strain.

"What makes you so sure he was murdered?"

"Amos Shorey had ten years experience in space. He was found outside—it was only an accident that he was found at all. His faceplate was open. His features were relaxed. That's not the way a spaceman dies, Mr. MacKenzie. Amos was drugged and put out an air lock."

"And Martin Holloway killed him?"

Eliot pursed his lips tightly. "I shouldn't have told Miss Hansen that."

He was silent for a moment. "But you'll find out, now that you're here. Yes. I couldn't prove it, but Holloway did it."

"If you can't prove it, how do you know?"

"I have a witness." Eliot's features twisted into an involuntary thin smile: wistful, sad, amused? Aeneas couldn't tell. "And a fat lot of good it'd be taking *her* into a courtroom. Not that Holloway will ever come to trial. Who'd prosecute?"

Aeneas nodded. Mexico wanted no jurisdiction over *Heimdall.* The United States was unlikely to prosecute one of President Tolland's agents—if the victim had been Tolland's man, that would be different. "Send for the witness, please," Aeneas said.

Eliot glanced at the clock above his desk, then at his wristwatch. Crew schedules were posted on the bulkhead, but he didn't seem to need to look at them. "She'll be off duty."

He lifted a telephone.

The girl wore white coveralls. She had a mass of brown curls, all cut short, and no makeup; but she walked with the grace of a dancer, making use of the low gravity. Her features were finely carved and relaxed into no expression at all, but Aeneas thought that she would have as much control over them as she did of her body. She was very young, possibly no more than twenty, and she didn't need makeup to be pretty.

"Ann Raisters," Eliot said. "Ann, this is—"

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"I know who he is. If I hadn't recognized him, Penrose had told everyone in the station anyway. Kit Penrose doesn't like you, Mr. MacKenzie. Should anyone?" She cocked her head to one side and smiled, but it didn't seem genuine.

"I'm told you were a witness to the murder of Captain Amos Shorey," Aeneas said.

Ann turned a suddenly expressionless face toward Dr. Eliot. "Why did you tell him that?"

"You told me you were."

"I should have known better," she said. Her voice was bitter. "Occupational disease with whores, Mr. MacKenzie. It's no less lonely for us than for the men who talk to us. Sometimes we make the mistake of thinking we have friends."

"If you were a witness to murder, you should tell about it," Herman Eliot said. "It was your duty to come to me."

The girl laughed. The sound was hard, but it might have been a nice laugh at another time and place. She ignored Eliot as she spoke to Aeneas. "Suppose I did see murder done? So what? Who'd try the case—not that a court would pay much attention to a whore anyway."

"You're registered as a biology technician," Aeneas said.

"Yeah. Mister, there are ninety-three men and twenty-six women on this satellite. Twenty of those women are engineers and technicians and whatever, and they sleep with one man at a time or none at all. Men serve a two-year hitch up here. Now what would happen if my friends and I weren't aboard? There are six whores on this ship. Call me an entertainer if you want to. Or a mother confessor. Or just friendly. I like it better that way. But if I get in front of a jury, I'm a whore."

"You sound rather bitter, Miss Raisters."

"I liked Captain Shorey."

"Do you want this station he gave his life to handed over to the people who hired him killed?"

Her lips tightened. "There's nothing I can do."

"There is. First, I have to know what happened."

"Who the hell are you, mister? Kit Penrose says you're working for the same outfit that killed Amos. Everybody knows the US Government wants to see Equity take control here. I don't know how to fight that combination, mister."

"Miss Hansen does. Dr. Eliot, tell Miss Raisters your orders concerning me."

Herman Eliot frowned. "Miss Hansen said to give him complete cooperation."

"Tell her the rest."

"Do you think that's wise? All right. She also said that Mr. MacKenzie is in command of this station if he says he is. Are you taking command, then?"

"Not precisely. Now, what did you see, Miss Raisters?"

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Ann shrugged. "What difference does it make? You can't do anything about it. I thought I could, but I'm just not a murderer. Neither is Kit. Or Dr. Eliot." Her voice tightened. "That's rich, isn't it? We don't even have the guts to knock off the bastard who killed our friend. Some of the short-termers might, but what'd happen to them when they went home? They'd be up for it."

"Vengeance murder won't solve the problems of this station," Aeneas said. "You may as well tell me what happened. Everyone else seems to know."

"Yeah. Why not?" She sat across from Aeneas, every movement graceful and lovely, in stark contrast to the angry expression of her eyes. "It started a long time ago. Men get lonesome up here, mister. They need a girl. Not just a lay, either. It took Marty Holloway longer than most, but he started coming to see me after six months. You will too if you stay long enough. Me or one of the other girls." She looked defiantly at him.

Aeneas said nothing.

"You will. Anyway, after about a year, Holloway starts talking to me a lot. I liked him. He's pretty cheerful and he seemed like a good worker. But he tells me how he's going to be rich when he gets down. Well, what the hell, we all are, but he meant rich and famous. Going to retire from the whole rat race and spend his life hiking in the woods. Maybe buy some mountain land and put together an animal preserve. Or be the top man in a really big National Park. Does this make sense?"

Aeneas remembered long nights when he and David Hindler stood watch together, and they talked of the things they would do when they'd taken Jerusalem . . . "Yes."

"Then he starts telling me Hansen won't own this place much longer, but I shouldn't worry because he can fix it so I go on *Valkyrie* anyway . . . I want on that, mister. And I want in the Moon colony. So I listened. Pretty soon Marty had me convinced. He had me wondering if Miss Hansen could last a year. But I didn't say anything to anybody until he asked me to help him."

"What did he want?"

"I'm a pretty good biotech, mister. I do my share of that work up here. Marty wanted me to poison the vaccine cultures so the yields would go down. Nothing drastic, nothing that would really hurt the station, just cut down production. So I told Amos."

"What did the captain do?" Aeneas asked.

"Amos wanted me to cooperate with Marty, but I wanted no part of that. I told Marty to go to hell. The next day when I was coming off-shift I saw Marty go into my lab, so I went to the captain and told him about it. Amos went in

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after Marty. An hour later one of the construction people saw the captain drifting away from the air lock."

"Were there any other witnesses?"

She wouldn't answer. "There's no point in this," she said.

"We'll see." Aeneas turned to Dr. Eliot. "Is there anyplace you can assemble the entire crew?"

"Yes—"

"Please call them together in one hour. Until then, leave me alone here." His voice carried command, and when Eliot looked into his eyes they seemed as deep as the stars outside the viewport.

The mess room was large enough to hold the hundred men and women with room to spare. It was the full width of the central section of the crew quarters, twenty meters across and more than twice that in length. Thin aluminum flooring made the floor flat across its width, and curved gently along the length. The walls were curving sections of a cylinder, with a metallic shine of impervious synthetic cloth. There were several viewports, deep, proving that the inner walls were covered with something outside them.

Aeneas let Kit Penrose lead him into the room. He noted small groups of crewmen clumped together, nervous little groups speaking in low voices that died away as they saw him.

"You know who I am." His voice, raised to carry through the mess room, sounded tinny and high-pitched. He had been told that the gas mixtures in the station would do that, but he hadn't noticed when he spoke in normal tones.

"What the hell are you doing here?" a man demanded. He came across the room to Aeneas: a tall man, sandy-haired and square-jawed, his muscles hard. He had the confidence of a man long in space, and more; a man who made his own destiny and controlled the destinies of others. It was a confidence that Aeneas recognized easily . . .

"Hello, David," Aeneas said quietly.

"Eh?" Penrose said. "That's Martin Holloway."

"His name is David Hindler," Aeneas said. "He is, or was until very recently, an agent of the CIA."

Holloway-Hindler smiled with half his face. "And Aeneas MacKenzie is, or was until recently, political and legal adviser to the President of the United States."

"I work for Miss Hansen now," Aeneas said. The room was still; everyone was listening.

Holloway shrugged. "You betrayed Greg after damn near twenty years with him—how long before you double-cross Miss Hansen, Aeneas? Just what the hell are you doing here, anyway?"

"I have come to try a case of

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murder," Aeneas said quietly.

Holloway looked up in surprise. "By what authority?"

"My own. I am commander of this station." He looked to Eliot.

"That's what Miss Hansen says," Eliot announced. "She appointed MacKenzie in Captain Shorey's place."

"That's stupid," Holloway said. "You've got no authority. Companies don't make law and courts and appoint judges—"

"Then I appoint myself. Sit down, David. You are charged with the willful murder of Captain Amos Shorey. How do you plead?"

"Go to hell! You've got no authority over me." He looked around for support.

"But I do." The quiet voice demanded attention. Holloway looked back to Aeneas and saw that he had taken an odd-looking gun from inside his coveralls. Holloway started to reach for his own—

"Don't!"

The command halted his move for a second.

"The first dart contains a tranquilizer," Aeneas said. "The rest have cyanide. And I've practiced in this gravity. Keep your hands where I can see them, David. And please sit down."

"I'll sit." Holloway eyed the gun warily. "But you can't make me accept the authority of your court. You're no better than any other gunman—don't the rest of you see that? You let him do this to me, and which one of you's next? Do something!"

There were murmurs of assent, and several crewmen stood menacingly.

"Wait," Aeneas commanded. The helium in the atmosphere of the station made his voice shrill, but the timbre of command remained. "You may as well hear me out. How many of you hope to go with *Valkyrie*? Or to the Moon colony?"

About half. Kittridge Penrose was among them.

"And why?" Aeneas asked.

"Because we've had enough of Earth and bureaucrats and laws and regulations," Penrose said. "We can't breathe down there! We've had it with the Martin Holloways—and people like you, MacKenzie!"

"Yet you cannot live without law," Aeneas said. "There is no civilization without justice."

"Law? Justice?" Penrose was contemptuous. "Rules, regulations, taxes, traps for people minding their own business."

"Those are perversions of law." Aeneas deliberately kept his voice low so that they had to strain to listen. "There can be no civilization without law and no civilized men without justice. Earth's law cannot govern here. It cannot even govern Earth. But that does not mean you can dispense with law altogether."

"So you'll give us laws?" Holloway said contemptuously.

"No. But this satellite is not in-

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dependent of Earth. It is not sovereign. It must have government. Miss Hansen has given me that task."

"Are you going to put up with this?" Holloway demanded. "You don't know this son of a bitch. Law! He's a goddam computer. He'll have you marching around under regulations like you've never seen." He turned to the crew. "Help me!"

"Help him and you give *Heimdall* to the Equity Trust. Or to Greg Tolland," Aeneas said. "I do not think you will care for either master. Even those who are here for short tours only—and those who want a new life in space will be finished."

There was a buzz of conversation. "Hansen's been decent enough." "Hell, he's got the gun . . ." "I don't owe Holloway nothing." "Let Penrose and Eliot decide; that's their job, I mind my own business . . ."

Aeneas raised his voice to cut through the chatter. "The prohibition against murder is as old as man. Are any safe here? Who had more friends than Captain Shorey? Who will avenge you if you are wronged?"

"What do you intend to do with Holloway?" one engineer demanded.

"I intend to try him for murder."

"Some trial!" Holloway shouted. "A kangaroo court."

"Yes. You prefer a court which you know will never convict you. I think, David, you have forgotten what a trial is for. It is not a show, but a means of discovering what has happened. I think we can do that here. The crew will be the jury."

"What happens if we say guilty?" Penrose demanded.

"Sentence is the responsibility of the judge. Martin Holloway, as you are known here, how do you plead?"

"You goddam fools!" Holloway shouted. "You're really going to let him do this, aren't you? By God, you touch me and the agency'll track every one of you down. You've got to go back to Earth sometime—"

"Not everyone," Aeneas said quietly.

"They've got families," Holloway said grimly.

Aeneas shook his head sadly. "This is beneath you, David. And I warn you, you are not helping your case. I advise you to say nothing else." Still carefully holding the pistol ready, Aeneas took a seat across the table from Holloway. "I wish you had not threatened the crew."

Because, Aeneas thought, *you force me to act alone.* But he had always known it would come to this. He had become—what? "Your plea is not necessary," Aeneas said. "I call the first witness. Miss Raisters, your oath. Do you swear—"

"His people will kill me," Ann

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said. "He wasn't alone. There are more of them here—"

"You told me Amos Shorey was your friend. And there will be justice here, and on *Valkyrie.*"

Her lips tightened. She took a deep breath and began to tell her story.

In two hours they had heard it all: Holloway's threats and promises to various crewmen; sabotage plans, promises of money and position when Equity took control of *Heimdall.* There were five witnesses to those acts; and Ann Raisters and another girl had seen Holloway enter the laboratory. They saw Captain Shorey go in after him; and Shorey never returned.

The station physician told them that Shorey died of explosive decompression, but that he had been drugged first. "I don't know the drug," he told them. "Not precisely. One of the curare derivatives, I'd think. Certainly something at least that powerful, to leave a man's muscles relaxed as he explodes. Not even unconsciousness could have done that."

When it was finished, Aeneas spoke to Holloway. "You may present your defense."

"I don't have to make any defense!"

"I advise you to do so. At the moment the evidence is much against you."

"You used to be my friend," David said.

"Make your defense," Aeneas replied. His voice was even; and no one could tell if that had cost him much or little.

"Crap. I didn't kill Shorey!"

"How did he die?"

"It was an accident. He—"

"Yes?"

Holloway thought for a moment. There was no possible explanation. Drugged, Shorey could not have operated the air lock; yet he had certainly been outside it. "You've got no authority here. I demand you send me down!"

"No. Have you completed your defense?"

"I've said all I'm going to say to you."

"Then this court finds you guilty. I would have put this to a jury, but your threats prevent that. David Hindler, alias Martin Holloway, this court finds you guilty of sabotage; attempted bribery; and willful murder. On the minor charges you are sentenced to forfeiture of all pay and allowances and one year at hard labor. You will not serve that sentence. On the charge of murder you are sentenced to death."

There was an excited babble in the room.

"Who'll kill me, Aeneas?" Holloway said. "You?"

"Of course. I would not ask anyone else to do it." *I never wanted the high justice; but I accepted refuge with the Saracens . . .* "Stand up, David."

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"No. I don't have to help you."

"You have five minutes."

Penrose and Eliot crowded around Aeneas. "You can't do this," Dr. Eliot said.

"Why the hell not?" Penrose demanded. "The bastard's got it coming."

"This is no better than murder," Eliot insisted. "You have no authority . . ."

"If I have none, there's none here," Aeneas said. "And you can't live that way. If you object, Doctor, you can get the crew to stop me. I'm only one man."

"Two," Penrose growled.

"Three." Ann Raisters stood behind him.

"Your five minutes are up. Have you anything to say, David?"

Holloway turned to the others. The crew hadn't moved; they stood or sat in small groups, watching, saying very little, speaking in the hushed tones used in cemeteries and at funerals. "You're all next!" Holloway shouted. "You let him get away with this and you're next! They'll send up company cops, and you'll all be slaves."

No one moved. They may have believed him; but Aeneas stood there as the figure of—

What am I? he thought. *Justice in person? The high justice? Why should they accept me? But what can they accept, in these days when no one trusts anyone or anything—there is only power. I would like to believe I am more than that . . .*

"They'll have you for murder, Aeneas," Holloway said. "Greg Tolland will have extradition warrants in every country on Earth. But don't worry about that, because the agency won't forget either. You're a dead man, Aeneas. You won't live an hour after you get to ground."

"I believe you." Almost, Aeneas envied David; Aeneas had once been part of that brotherhood of dedicated young men, and he missed their camaraderie. But now he served the Saracens . . .

Must I do this? What choices have I? There had been a time when David's threat would have been welcome; now, Aeneas would never see Laurie Jo on their lonely beach. She wouldn't be safe for long, either. Earth was not a place of safety for anyone, great or small.

The station turned slowly and through the ports he saw the spindly framework and tankage that would someday be *Valkyrie.* Earth was lovely beyond it. *But she will come here, and we will take that ship together . . .*

"Lost your goddam nerve?" Holloway demanded. The fear was unmistakable in his voice, and beyond it was pleading. "Get it over."

The pistol coughed twice.

Afterwards, Aeneas stood again at the viewport and looked at *Valkyrie*; but he did not look at Earth. ■

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KELLY FREAS

walk barefoot on the glass

Scientists are cold-hearted, impersonal, narrow-minded intellectual snobs. Oh, yeah!

JOSEPH GREEN

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Winston Takamira took a deep breath, visibly gathering his strength, then bent forward again over the microphone. Above the ruff of white hair that circled the rear of his head the sallow skin of forehead and bald dome glistened with a pale sheen of perspiration.

"And I conclude, sir, by saying Moon-Eye is *more* than just an observatory, *more* than the first permanent outpost man has established on the infinite frontier of space. In a very true and real way that telescope represents the outward-looking spirit of the human race. In these days of short-range goals, of grasping demands that every dollar spent on science return two dollars at once, Moon-Eye stands as an ongoing commitment to basic scientific research. I ask—I *claim,* sir, from yourself and this committee—our due share of the national science budget. Thank you."

The short, wiry old man pushed the mike away and leaned back in his seat. The committee chairman on the raised platform drummed nervously on the table, a rapid exercise of deeply wrinkled fingers. He turned to whisper a word to a colleague, shuffled once more through the papers before him, and finally laid them aside.

The chairman tilted his lined face toward a microphone. His expression was grave, almost somber. "Dr. Takamira—your eloquence is outstanding, as always. But the Space Sciences Committee has heard it all before. I'll have to check the proceedings, but I think this speech is pretty much a rehash of the one you gave three years ago, when you didn't have anything new or very exciting to talk about. But I've got something new for you, sir. We took your budget, and added to it the full cost of all manned spaceflight past the space station. That's fair enough, isn't it? All manned flight beyond Earth orbit just supports Moon-Eye, now that we've finished up the Mars missions. Know what the total is, sir? A nice, even two billion dollars! Two billion dollars, Dr. Takamira. Know how many homes that will build for the disadvantaged? How many more acres of the Mojave we can reclaim for wheat? You pure scientists can't ever see anything but your own little end of the picture. That's why the people elect politicians to look after their interests."

Two of the committee members smiled slightly. The other two behind the raised table with the chairman looked bored.

The chairman paused to gauge the impact of his words, ever mindful of the watchful eye of the Tri-D camera. Only the sharpest and most cogent comments were likely to make the evening congressional summary. Samuel McGinnis had been in the House of Representatives for twenty-two years, and in his present powerful post for eight.

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He survived by a shrewd ability to guess the true public sentiment on complex issues well ahead of the opinion polls.

"Well, sir, you've sat up on the Moon for eight years now, eating up the public money. Oh I know, all the astronomers in the world support you, our air is too polluted and they might as well shut down Palomar and Wilson and Lick and so on, but just the same—what are we getting out of Moon-Eye? Where's the equivalent of discovering helium in the sun, or learning to understand atomic energy? You spoke about trying to get two dollars out of science for every one spent, as though this was a bad thing. What's bad about it, sir? Science showed us how to make the desert bloom, and that's what people want to see in 2008—a real return for their money, something that puts bread on the table. What can Moon-Eye offer us to compare with wheat from the Mojave?"

McGinnis paused; that had been a telling question, the one he was seeking. Win saw the satisfaction on the other man's face. McGinnis had tried to vote Moon-Eye out of existence for the past two years, and been overruled by the rest of the committee.

The chairman realized he had taken a too obviously partisan stand, and tried for balance. "Well, anyway—thank you for coming down to talk with us. I don't know what the committee is going to recommend, but I can tell you this—I intend to push for all or nothing. Either we shut 'er down and bring you fellows home, or we go to a four-year budget cycle that won't require a committee hearing every September. We'll probably have our report out by the time you get back to the Moon."

"Thank you, Mr. Chairman and committee members," the old astronomer said hastily, as chairs scraped backward behind the raised table.

Dr. Winston Takamira assembled the papers spread before him and tucked them away in his comfortably worn briefcase. He felt like an actor who has bored his audience. Still, it had been almost as bad two years ago, and all four committee members had voted against their chairman.

It had been shrewd of foxy old McGinnis to recognize Win's speech as a reworked one. He should have forced himself to write a new version. But Moon-Eye had existed long enough to be considered an institution, and Win had become complacent about this annual appearance before Congress. He would have to be more careful in the future.

It took a distinct effort for Win to straighten his stooped shoulders, lift the heavy briefcase, and walk out of the room. He had been on the Moon for ten years, arriving during the first phase of construc-

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tion. Short stints back on Earth were not enough to adjust. He felt unduly heavy here, as though his slight frame was badly overweight. It was always a physical relief to get back to Moon-Eye.

Outside, he spotted his government steamie waiting at the curb. The driver opened the door for him, and Win sank into the padded seat with a tired sigh.

"I guess it must be hard on you to come back down to the real world, sir," volunteered the driver, as he eased into the congested Washington traffic.

"It's tough on old bones," Win agreed, his mind elsewhere. "Did you get in touch with Len Sterenko?"

"Yes, sir, just like you asked. He'll meet you at Kennedy for the lift-off at ten o'clock tonight."

"Good; thank you."

They had progressed only a few blocks down Pennsylvania Avenue before a commotion in front brought the already creeping traffic to a halt. The driver stopped, then got out and peered ahead. He returned to his seat and said, "Another Food-For-The-Hungry demonstration, sir, coming right at us. We may as well let it go by."

Win glanced at his watch, grumbling under his breath. He had hoped to enjoy a peaceful dinner with his daughter's family in New York before catching the shuttle. He conscientiously tried to see his grandchildren on each trip, though he felt certain the two youngsters were as quickly bored with their grandfather as he with them. And he had never actually been very close to his only child, for that matter. Work had occupied too much of his time when she was small. And wife Mildred had seen to it daughter Ann grew up feeling deeply neglected by her father.

The first marchers reached the car, threading their way through the stalled traffic with banners and placards held high. Win forced himself to sit back and read the often crudely printed but always large words: PLANT MONEY IN THE SAND and FEED THE HUNGRY PEOPLE seemed to dominate. One long banner, carried by two nude young women shivering in a cool autumn breeze, read WHEN A CHILD IS HUNGRY YOUR BELLY SHOULD HURT. Several were variations on the theme, MONEY FOR MOJAVE—BREAD FOR BRAZOS.

"What the hell!" Win said in surprise. "You mean these people want to expand the Mojave Project so we can send food to another *country?*"

"Yes, sir, that they do." The driver, a stout, red-headed freckle-faced man in his late forties, turned to face his passenger. "We got enough wheat in the storage bins to support Brazos for three years, and the Ag guys say they can have the whole Mojave producing by then. All the people are one, and hundreds of thousands are starving

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down there. Just 'cause they speak Spanish and us English is no reason not to send 'em our surplus food."

"The Brazos people speak Portuguese, not Spanish," Win muttered, watching the laughing, chattering crowd stream by. They were mostly young people, but a few were elderly. All looked well-fed.

The driver turned back to the front. A roll of fat on the back of his neck was red with repressed anger. They waited in silence until the last of the demonstrators passed, and traffic resumed moving.

Amused and a little irritated, Win tried to reopen the conversation. "Feeding the hungry people of Brazos sounds very commendable, but we already give away many billions in food each year--some of it to Brazos. We can't possibly feed the whole hungry world. Don't you think we'd be smarter to devote more of our resources to long-term goals that could benefit *all* mankind? Such as, say, the control of hydrogen fusion for almost unlimited power?"

"All the people are one," the driver repeated, without turning his head. His voice was sullen and low. "If you love the people of the world, sir, you don't want to see them suffer, see little children dying in the streets."

"No, of course not. And I don't want to see the world power shortage get any worse, or the promising research on further life extension stopped, either. But that's what will happen if we don't devote a large part of our budget to basic science--even if a few of our neighbors do go hungry."

"I don't want to argue with you, sir, 'cause you'd probably report me and get me in trouble."

Win still felt tired, but alert and stimulated. He seldom had discussions of this sort with non-scientists; he was hearing a new point of view. And a faint foreboding warned him this driver could voice the feeling of billions of people.

"No; I'm very interested in what you think, and I certainly wouldn't report you. We're just two grown men discussing the world situation. Speak your mind, by all means. I promise; no complaint."

"OK then, I'll tell you. I'm not ignorant, I know what science can do. But you Moon-men expect little guys like me to spend our whole lives grubbing away so you can work on way-out things that'll never amount to a hill of beans. You can study your quasars and your pulsars for a hundred years, and it won't help a single human on Earth. We've got a right to see our tax money spent on things that will benefit us. We're only going to live out our eighty, and a man wants all the good things he can get while he's alive to enjoy 'em."

That was exactly what McGinnis had been saying, in somewhat more polished words. It was a simple but strong philosophy, one

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hard to refute. Win tried: "Look, the time-lapse between the findings of basic research and later application isn't as long as you seem to think. As for enjoying everything in life now—what if that enjoyment takes money away from work that might *extend* life? Such as the research on aging retardation that *got* us to eighty?"

The driver refused to answer. The flesh around his neck was red again.

Or keeping the last clear big eye focused on the stars, or trying to understand why no one's contacted us when we know they must be out there, and what does it all matter to a man who's past his eighty and ready to go anyway?

But Win did not speak those thoughts aloud.

The driver knew his work, and got them to the tube station on time. Win had less than five minutes to wait before boarding. He strapped in and sat quietly, ignoring the reports he had brought along to read. The long, sleekly rounded metal snake of the tube train pulled out and dropped toward the bowels of the Earth, swiftly accelerating as air was sucked from the tunnel ahead and fed in behind. At top speed they were hurtling through the tight-fitting tube at seven hundred kilometers an hour. But they barely attained that rate before the train was slanting up again, slowing, as Earth's ancient pull and increasing pressure ahead cost it momentum. They crawled the last few meters into the Newark station on small electric motors.

Win transferred to the metropolitan subways and rode to Grand Central, and from there out to Queens. He walked the last four blocks to Ann's condominium; even that short distance was a strain.

Ann looked her forty-two years. There was a matronly bulge to her hips and waist, and her cheeks were growing round. Win said hello to husband Burl and the two children, Cindy and Jack. The young ones greeted their grandfather with indifferent politeness; they were not impressed by astronomers. Now if he had been even a minor Tri-D star . . .

"Why do you have to keep coming down every year to justify your budget, Dad?" Ann asked, after a surprisingly pleasant dinner. "I know it's hard on you. Why can't you just write to the Space Committee?"

"Yeah, I've often wondered about that myself," said Burl. Win's son-in-law was a big-stomached man, swiftly going to genuine fat, who worked for the State Transportation Commission. He had long ago made it plain he would have preferred a father-in-law with influence of the type that could help him with his career.

"The answer is that the small

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fame I possess gives me a slightly better chance than anyone else of getting all we've asked for out of Congress. But this may have been the last hearing, at least for me. McGinnis said they were going to start a four-year budget cycle, and I doubt I'll be down for the next one."

Win looked at his daughter, noting the only two traces of his Japanese ancestry: the black hair and lustrous dark eyes. She looked far more like her mother, who was of Germanic stock. *Even there,* he thought, *I've failed to make any real impression on the world!*

"What's so important about Moon-Eye?" Cindy suddenly asked.

Win turned to his granddaughter, one of the few creatures on Earth he was obligated to love, and realized he felt nothing. She looked very much like Mildred, as though his genes had been shunted aside after one generation. Cindy was a fresh-faced, brown-haired girl of twelve, just swelling into young womanhood.

After a brief pause Win said, "I think I'll tell you, Cindy. I hope you're not too young to understand."

"She makes very good grades in her social consciousness class," Ann said immediately.

"Fine, then she should be able to follow me. Cindy . . . that big scope is our contact with the rest of the universe. There's a trend on Earth to turn away from exploration, to develop what we know at the cost of learning something new. There hasn't been a time since the Middle Ages when people had so little interest in anything but their own personal affairs, cared so little about tomorrow. Each year less and less money gets appropriated for scientific research. And basic science is the engine that pulls the rest of the train. I don't think it's too strong to say we're at a . . . a crisis of the human spirit, a major turning point in our development as a species. We have to revive people's interest in gaining knowledge for its own sake, renew all the old fires of passionate inquiry—or turn on a new track, one that runs in a big circle, with people surrounding the train with their hands out, everybody wanting everything today, with no care for the future. We have to fight this tendency to get fat, to settle for what we have, to stop striving."

Cindy was silent, but her dark eyes were large and bright.

"Oh *Dad!* You're being too intense, you'll frighten the child!" Ann's voice was half-laughing, but serious beneath the froth.

Win glanced away from Cindy, to see a sullen, inwardly angry look on Burl's face. It must have been that remark about getting fat. His son-in-law was dense enough to think Win had been referring to fat of the body.

"We talked about Moon-Eye in Social Con today," Cindy volun-

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teered. "I told them about you coming down and testifying in Congress and all, and guess what? We took a vote . . . and it went three to one to shut Moon-Eye down!"

Cindy turned and ran from the room, holding a hand over her mouth to stifle a shrill giggling. Jack, three years her junior, stared wide-eyed, until his mother motioned vigorously for him to follow his sister.

"My heavens, I don't know what's gotten into her," Ann said as an apology—but her voice lacked conviction.

"I think I do!" The low but angry voice was that of Burl.

"Now don't *you* get started too!" Ann almost begged.

"Cindy hit you with that because she's a very bright young lady, and you talked down to her like you were lecturing a little kid. Only it's even worse than that. You were really talking to Ann and me, to the adults."

Win was silent.

"But you *talked* like you were speaking to little kids," Burl went relentlessly on. "That's the way you always sound, like you're the adult and the rest of us are children."

"Burl," Ann spoke quickly and nervously, "please don't take that tone with my father."

"I'm not saying anything he shouldn't hear. Let me ask you one question, Mr. Big-Name Astronomer, just one question. You don't have long to go anyway. Why do you really care about what happens to Moon-Eye?"

"That's an easy one, Burl. A lot of my life is invested in that observatory. I'd hate to find I've done all that work only to see it wasted. Moon-Eye is much more important than I am; I want to know it will keep working after I'm gone."

"Because you love mankind so much? Because you think you've provided the rest of us poor slobs with some permanent benefit? You're the man who neglected a fine woman like Mildred until she got tired of raising a daughter alone and divorced you. You're the man Ann thinks of as a little god . . . but not a father! You were never a father to your child, Mr. Astronomer!"

"Burl, that's enough!" Ann said sharply.

"Just one thing more, and I'll hush. I've heard this dreck about 'loving mankind' from the scientist types all my life. Know what I think? I think any man who can't love his wife and his own kid can't love anybody! You fellows are as cold as fish. You get your kicks out of big intellectual exercises like trying to figure out the origin of everything, and that's all you're interested in. You love your work and nothing else. That's what I think—and I'd like to see you prove me wrong!"

"I'm afraid I haven't time to do that," said Win, rising.

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Ann jumped to her feet. "Dad, don't leave now! Let's talk it out, you know, desensitize the engrams. If Burl feels—"

"Thank you for dinner, Ann," Win firmly interrupted. "My briefcase? . . . yes, thank you. Goodbye, my dear. I recently filed a new will, leaving everything in trust to the children, to be used for their education. Give them my . . . love."

Moving very quickly Win got outside the door, and shut it behind him. He was not in the mood for encounter psychology games.

He set off briskly for the subway entrance, but had to pause less than a block from the condominium and breathe deeply for a moment. Win looked back at the tall, blocky building, and realized he was seeing it for the last time. He couldn't bear to face Ann and the children again.

Because there had been a great deal of truth in Burl's words. Win had married late, past forty, to a woman fifteen years his junior. And after the first few years, when Ann was a baby, he had indeed neglected Mildred. His work was the true love in his life, and he had returned to it. The marriage had been a mistake. He should have remained a bachelor.

Win straightened his stooped shoulders and set off again for the subway, walking more slowly. His work, at least, had never betrayed him. After Ann was old enough to start school, Mildred often did.

Win had ignored his wife's infidelities, but even his tolerance was not enough. When Ann was twelve Mildred asked for a divorce. Having little use for personal money, Win had turned over most of his salary to his ex-wife until their child was grown. Mildred hadn't married again, saying her responsibility was to Ann. Actually she had continued the romantic life she had started.

It was only a fifteen-minute ride to the Kennedy Air/Space Port, and Win was an hour early. Len Sterenko had already arrived. The tall, sharp-faced younger man—strange, to think of a scientist past fifty as "younger"—looked as tired as Win felt. Five years at Moon-Eye had weakened him also.

The two men exchanged greetings and sat talking in the waiting room until boarding time. Len, chief of the Moon-Eye science staff, was serenely optimistic their budget would be approved. Win leaned that way, but was less certain. The incident of the FEED THE HUNGRY PEOPLE marchers lingered annoyingly in his mind. He did not tell Len about them, or his own fears that man was becoming so preoccupied with looking down at his belly he could no longer raise his gaze to the stars.

The veteran space travelers endured the twenty minutes of being strapped on their backs in the

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shuttle seats before the lift-off, and the twelve minutes of three-G flight before finally obtaining orbit. The pilot flashed a view of the Bola on the inner viewscreen as they approached the space station. The three cable-connected modules whirling their way around the Earth were a far cry from the gigantic wheel originally envisioned as the space station of the year 2001.

The refueled Nerva tug drifted toward them and attached to the shuttle air lock. At least the passengers did not have to put on the awkward spacesuits. The two scientists and the five other people bound for Moon-Eye transferred, and the two craft separated. After twenty-one hours that included a few snatches of troubled sleep they transferred again, to the lunar lander. Thirty minutes later they were settling toward Khrushchev Crater on the back of the Moon, and the cool white dome of the Hoyle Observatory.

"It's good to be home," said Len, as he followed Win out of the small lander. Win did not reply, but he too felt the soothing relief of the lighter gravity.

They discussed the current schedule while walking the kilometer from the underground landing field to the observatory. The dome would slip into shadow in fourteen hours. The first target was an unnamed pulsar which emitted pulsed radiation in the visible light section of the spectrum. They were to obtain data for a comparison with the star's X-ray emission. Win could not help thinking, wryly, that they were very unlikely to learn anything of immediate benefit to mankind. As to what practical applications might appear in the future, neither he nor anyone else could say.

"Welcome back!" said a hearty voice as the two men emerged from the tunnel. Charles Abrams, the engineer who had supervised the design of Moon-Eye and stayed to become its operations manager, was waiting for them. He and Len, between them, actually ran the observatory. Win carried the title of director, but had long ago settled for deciding scientific priorities and working to keep Moon-Eye funded.

Charley Abrams was a big, pink-skinned man with a shining bald forehead and thick glasses, just enough overweight to make returning to Earth extra hard on him. He hadn't been back in four years.

"Did you get that air-bearing leak on the main drive stopped, Charley?" Len asked as they walked toward Win's office.

"Yep; we exercised her through a full cycle with the dome evacuated, and the bearing temperature stayed constant."

Win gave Charley a brief rundown on the Congressional reaction to his presentation, and the three men went over the operations planned for the next two weeks.

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Most Moon-Eye personnel were sound asleep. Len and Charley settled a few friendly arguments, and they broke to get some rest before starting the new cycle.

Win slept for a good nine hours. Charley Abrams woke him. The big man was unusually quiet, almost withdrawn, as though suffering from shock. "Just picked this up on the noon news, Win. The Space Sciences Committee voted four-to-one to shut down Moon-Eye. We get three hundred million to close her out, and that's it."

Win sat up in bed. For a moment he felt only numbness; then the death of his life's work sank slowly in. Strangely, it did not hurt. He realized that subconsciously he must have already known, have accepted that this was the way it would be.

"Yes . . . well . . . has the word gone out? Does everyone know?"

"Afraid so. A lot of people watch the noon news. Do you want to speak on the PA system? Point out the committee may be overruled by the full House?"

"No." The word was out before Win could stop it. He added, "No point. It would take a miracle for the House to override the committee."

"I didn't realize you'd come back that let-down," said Charley, still quietly. "Anyway, we can finish the two weeks coming up. We have time for an 'orderly shutdown', I think they called it."

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"Yes, by all means. Let's open the dome on schedule."

"Evacuation starts in about an hour. I'll tell them to keep going."

Charley turned and left. Win slowly dressed, and then sat for a few minutes on the edge of his bed. His mind seemed curiously blank, as though part of the vacuum waiting outside had crept into his skull. He had no thoughts, felt no emotions . . . perhaps this was what it was like to be dead.

As Moon-Eye had been condemned to die.

Actually even more than Moon-Eye would fade away. The deep space transportation system that supported it would die as well. The

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Bola would be next; and then man would again be confined to his own planetary space.

Win rose and slowly made his way to the central hall. On an impulse he turned and took the first corridor leading to the outer wall. Most of Moon-Eye was underground, constructed by blasting a large hole out of the flat rock and roofing it over. The outer rooms held the life-support equipment and supplies, the inner ones the living and recreation quarters.

Win located a supply room, used his master key, and found a length of rope. He seemed to be acting by rote, without the need for conscious thought. Outside again, he followed the outermost corridor to the dome itself. It was anchored to bedrock in the northeast corner.

The little-used walkway was deserted. Win saw no one until he reached the intersecting corridor around the dome itself. An inspector was just sealing the nearest door, stamping his number and signing his name.

"All doors closed?" Win asked casually, trying to remember the man's name; he could not. Burl's strong words came back to him, and the argument with the government steamie driver. Both had spoken harsh truths. He claimed to work for the benefit of man, but paid little attention to individual men. He lived only for his work, which this man and ten thousand like him supported with their labor. And the society they represented had withdrawn that support. Win's work had, at last, betrayed him.

The inspector looked curiously at the rope, but answered the question. "Yes, sir, and sealed except the one off F-corridor, which I'll get next. We'll be ready well ahead of time."

"Fine; I suppose you know this will be our last run. We want to make it a good one."

"Yes, sir, I heard. Excuse me, I've got to check that last door."

The inspector hurried away, throwing a look of troubled sympathy over his shoulder. He was young, and could find another job.

As soon as the man was out of sight Win broke his seal, spun the pressure wheel, and opened the door. Inside, he tightened the inner wheel.

When building a base on the Moon with limited funds, economy ruled. On Earth a vacuum chamber would have had elaborate electronic security systems. Here the inspector and his stamp had to suffice. Unless someone rechecked that door, which was highly unlikely, his entry would not be discovered.

It was extremely cold inside, though nothing to what it would be when the dome opened. Win shivered violently, controlled it by relaxing, and hurried up the metal stairs to the overhead catwalk. He followed the familiar path to the narrow track leading to the cage.

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No inside operator was required on this run, and the small cage at the prime focus, the only area inside the dome where air was allowed, was empty.

Win tied the line securely to the rail outside the cage, and dropped the free end over the side. It came to rest just above the concave surface of the 160-inch mirror.

With one leg already over the railing Win hesitated, then returned to the catwalk and hastily removed his shoes. He could take no chances on ruining the year's work that had gone into polishing that expensive reflector. And then he realized his clothes would probably out-gas in the vacuum, and spread fibers everywhere; he shed them also. Win threw clothes and shoes into the cage and sealed it shut again.

The cold from the metal catwalk seemed to run up his legs and into his chest, where it changed to fire. He was shivering again, so badly he could hardly hold the rope, but managed to scramble over the railing and lower himself toward the mirror. Despite the weakness of his old muscles the strength derived from a heredity of one gravity enabled him to climb down with relative ease.

Win wondered, as his feet touched the hallowed surface of the only worthwhile telescopic mirror still left to man, if even this would be enough. Not being religious, he could not pray; he could only hope.

He was rapidly growing numb from the cold, but still felt the extra chill from the glass. An internal control system kept it at a constant low temperature. Win glanced at his watch, which he had forgotten to remove; evacuation would start in fifteen minutes. He wondered if

the analytical laboratory

DECEMBER 1973

PLACE	TITLE	AUTHOR	POINTS
1.	The Sins of the Fathers (Pt. 2).	*Stanley Schmidt*	1.64
2.	The Hellhound Project	*Ron Goulart*	2.00
3.	Skinnerian Box	*Roger A. Beaumont*	3.70
3.	Soldiers' Home	*Lawrence A. Perkins*	3.70
4.	Weed Killers	*Ronald Cain*	3.79

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he would last even that long.

Win slipped off the watch and carefully hurled it into an open area, where it could lie harmlessly forever. Then he took two steps to the hole in the mirror's center, and stood looking down into it. Strange, how large the 32-inch diameter seemed. Very carefully he lay down around the edge. It wouldn't do to have his body tumble in if they moved the scope before finding him; the sensitive instrumentation underneath could be damaged.

Lying on the refrigerated glass surface brought on a fresh fit of shivering, but it soon passed. He was growing numb. After a few minutes Win lost all feeling of contact with the mirror. His mind seemed divorced from the body that had labored eighty-four years to support it, as though, at the last, declaring its final superiority. But he was still conscious when the first faint throbbing of the evacuation pumps reached his ears.

Win wished, somehow, it would be possible to remain alive until the dome split overhead, allowing one last look at the stars.

He knew, as usual, he was wishing for that which could not be granted.

"They did it!" Charley Abrams burst abruptly into Len Sterenko's office, waving a telefax sheet. "They did it, Len! The full House overrode the committee! 'Appropriations to continue at present level of funding for four more years.' " The big man paused, jubilation giving way to sorrow. "If only Win could be here with us, if he hadn't . . ."

"Easy, Charley; don't let it get to you." The acting director of Moon-Eye came swiftly around the desk and clasped his friend's shoulder. "Look, you don't think we had a chance in hell of getting that money before Win's suicide, do you? That was what got us the national headlines, the thousands upon thousands of letters pouring into Congress. Don't you think the old man knew what he was doing?"

A startled look crossed Charley's face. "You mean . . . Oh my God! Of course! And I never thought of it . . ."

"Remember how he took off his shoes and clothes, even threw away the wrist watch, to keep from damaging the mirror?"

"You're right, you're right!" Charley hurried toward the door. "I've got to tell the others . . ."

Len Sterenko watched him go, then slowly returned to his desk. They would never be able to prove it, but—

He asked himself if he truly believed that Winston Takamira, in committing suicide, had guessed that his sacrifice might save Moon-Eye.

He answered that he did.

And he thought: *What will I do four years from now when they try to kill Moon-Eye again?* ■

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closing the deal

BARRY N. MALZBERG

Negotiations between buyer and seller always follow the same pattern—regardless of what's being bought and sold.

LEO SUMMERS

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"She flies," the father said, indicating the little girl dangling uncomfortably midway between a baroque chandelier and the rather mottled carpeting. "And she has for more than five years. You can imagine that it gave us quite a turn when we saw this *three*-year-old just swoop up from her toys and begin to bat around the room, but after a while you can become accustomed to almost anything. That's the human condition, am I right?" He spread his hands and looked at the guest directly, gave a little laugh. "Actually, she's a very sweet, unspoiled little child and I've tried to give her a healthy, wholesome upbringing to make her take her gift in stride. *Never* in front of anyone other than me without permission and *double never* out of the house. All right dear," he said, "our guest has seen everything he needs, I'm sure. Come down now."

The little girl bobbled near ceiling level. "I can turn over in the air," she said to the guest. "I can do dips and floats and even pirouettes. If I went to ballet school like I wanted to I could do even the better stuff but he won't let me."

"I'm sure he would," the guest said gently. He opened the loose-leaf binder on his knee, took a pen from his suit pocket and made a note. "You have a very kind and understanding father."

"I have a very kind and understanding father but he won't let me go to ballet school and he won't even let me fly unless he wants to show me off," the girl said. "I don't think that's right, do you? Not letting someone do what they really do best except when *he* wants me to." She revolved slowly, drifted toward the floor headfirst, reversed herself clumsily near the prospective point of impact and landed, wobbling, on her feet. "I'll go and *watch* television," she said. "I know you want me out of the room now. He always wants to show me off and then throw me out."

"That's not necessary, Jessica," her father said uncomfortably, "and you know perfectly well—"

"But it's *true*," the girl said. She nodded at the guest. "Actually I can't fly all the time," she said, "you ought to know the truth; I can't even do it every time I want to. Actually it's a very tiring thing. No more than fifteen or twenty minutes and then I have to rest for a whole day." She walked to the door, as clumsy on her feet as in the air, attempted a curtsy and left, closing the door not too gently.

The guest and her father sat in the living room, looking at one another rather uneasily for a time. The clock banged out four syllables, or then again the guest thought that it might have been five; it was very hard to keep track of the sounds which were swallowed by carpeting and then too, this was a peculiar household. Nothing was

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quite as it seemed to be. Four or five, however, it was certainly late afternoon and he wanted to complete his business and go on his way.

Idly, the guest imagined a large, frosted cocktail glass before him, around him was a large roadhouse, quiet conversation. He could ask this man for a drink, of course. But that would only compromise their dealings. A drink could cost him a hundred dollars in this living room. *I must get hold of myself,* the guest thought rather frantically, *this is only a job and I ought to be glad to have it, everything considered. Involvement, pressures are on the agency, not on me.* "Remarkable child," he said hoarsely, scribbling something else and then slamming the binder closed, reinserting pen in pocket. "Very intelligent for her age. Of course extremely undeveloped as both you and she know. Her management of distances—"

"Well," her father said, spreading his hands again, "I *have* tried. The fact that she has one remarkable talent doesn't excuse her, after all, from living in the world. She's in an accelerated program at school where they take her to be simply a bright, normal child and I've also arranged for reading tutorials at home and music lessons twice a week. She's studying the violin, my *favorite* instrument. Frankly, the child has almost no ability but the cultural background—"

"I understand," the guest said rather hurriedly, "you're doing an excellent job within the limits—"

"It isn't easy in a motherless household you know. I've had to be both parents to Jessica, which would be difficult with even a *dull* child, and she has to be shielded and educated carefully." The man paused, wiped a hand across his streaming forehead. "It's really been quite difficult," he said, "I'm sure that my wife had her reasons for leaving me and I was right to insist upon custody and I'll concede too that it was a *relief* when she walked out, but all of this has descended on me and I've had very little help from the woman or anyone else for that matter. She was always selfish and inconsiderate, her mother, and I think that the flying business was the last *straw* in a marriage that frankly, was never very good." He paused again, eyes rolling meditatively. "But that's neither here nor there," he said, "and you're not over here to be burdened with my personal problems. The point is: what are you going to do? I brought you here for *your* proposal."

"Um," the guest said, "isn't the point though what *you* want to do? What do you expect, sir? The organization which I represent, you understand, is an exceptionally cooperative one and never makes outright conditions. Rather, we're here to listen to what you thought you might have had in mind."

Carefully, the guest put a hand

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into his jacket pocket and fumbled for a pack of cigarettes, extracted one, lit it hurriedly and then, in response to a long, poor glare from his host, put it out in a large, green ashtray at his elbow. Little foul emanations stabbed at him like vipers and he choked. "Sorry," he said. Sinus trouble again; nervous strain. Why did the caseload always turn out like this? By definition, parents of the psionically gifted, particularly the levitators and telepaths, seemed to be at least mildly insane. Maybe that was the biological secret: insanity transmuted itself to psionics in the second generation. Or then again, maybe levitators and telepaths *made* parents insane. That was a thought, although, unhappily, not a new one. He choked again. "I apologize," he said, motioning toward the cigarette, "I didn't realize that smoke offended—"

"I will not tolerate smoking here," his host said. "That woman smoked, all she *did* was smoke; it took me three years after she left to get the air cleared and the smell out of the house. Smoke also inhibits Jessica's levitation."

"It shouldn't," the guest said firmly. "There is no connection."

"But it does." The man leaned forward, almost forehead to forehead now. "The time for amenities is past, don't you think?" he said. "And I know you're a busy, responsible man. Now what I'd like to hear is your offer."

The guest sighed. "It isn't that easy."

"And why not?"

"Everybody, all of the people, think in terms of offers, simple all-inclusive figures. But there are so many other things involved: the terms, the conditions, and more importantly the strength of the talent and the degree of its refinement—"

"Flat offer," the man said, touching palms with himself. His face seemed tinted with sweat or excitement; he had to work on his forehead again. "All inclusive. Everything. Full responsibility, full control. Live-in."

"You wouldn't even want to retain—"

"Nothing," the man said quickly. "I've done everything I can for my child. Now she ought to be in the hands of people who can really develop her. I want an all-inclusive offer for total control."

"No subsidiary? How about participation in the secondary rights: performing, options, a percentage—"

The man cleared his throat. "I'll take it all on the front end, as much as I can get," he said.

"Ah," the guest said. "Ah." He opened his notebook again, extracted the pen, thought for a moment, and then quickly wrote down a figure on a fresh, blank sheet, tore it past the reinforcements and handed it to the man, who seized it. "That's really the best we can do," he said, "it's a nice little talent,

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but levitation is far more common than you might think, and Jessica is completely untrained. She'd have to be trained from the beginning; the first thing she would have to do is to *unlearn* levitation so that we could start her from the beginning without any bad habits. The child has no body control at all."

He closed the book, sighed. "People think that all we do is go to work," he said, "but there's more than you might think and the key issue is the training, which is incredibly complex and expensive. Believe me, I have seen many who would cost more to train than they would eventually return, like doing heavy repairs on old cars. Fortunately Jessica does show some ability, very raw, but she might be third-string somewhere and there's a need for this."

The man closed his mouth finally and handed back the paper. "This is ridiculous," he said slowly, "I mean it's robbery. It's less than a quarter of what the child is worth. A true levitator! A natural talent! Any one of the other agencies would *double* this price. I don't care who I'd see there."

"Then I suggest you *go* to one of our competitors," the guest said quietly; he put his pen away for the second time, closed his book with a snap and stood. "I'm afraid that we do not misrepresent or pack our offers as our competitors do. Our policy is one figure, a fair offer, taking into account every aspect of the situation. If it's taken, fine, and if it's not we happily accept the loss because a higher offer would have been unprofitable and thus self-deceiving. Our policy is

---

in times to come The planet Mercury hasn't been kind to science-fiction writers. Several very fine stories set on Mercury have been invalidated by advancing astronomical knowledge about the Sun's nearest neighbor.

A new writer, Brenda Pearce, brings together all that's known about conditions on Mercury for a strong story of men against nature—and against each other—called "Hot Spot." It's the lead novelette in April's issue, with a dramatic cover painting by John Schoenherr.

In this age of militant feminism, it would be chauvinistic to marvel about a woman writing a "hard science" story. But regardless of gender, Ms. Pearce has produced a stunning story in the Hal Clement tradition, no mean feat for any new writer.

The science article next month will be "Extraterrestrial Organic Matter," by Louis Lenhard. It deals with the discoveries of organic chemicals in interstellar space and in meteorites, and the implications for the origin of life on Earth.

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built on rigorous fairness and the skills of its highly-trained field staff; and now," he added, moving toward the door, "if you will excuse me, my working day is done."

"Now wait a minute," the man said slowly, the words wrenched from him one by one like sobbing exhalations from a balloon. "I didn't say no. I mean, I didn't *flatly* say no. I mean, if that's really your policy, one offer, how was I to know that?" He touched the guest on the arm, trembling slightly, backed off at once. "I mean, I know your reputation," he said, "that you're honorable people."

"Thank you."

"But frankly, I *have* to get a little more than that."

"Try one of our competitors then. You said they would do better."

"But I have to think of my *child*," the man said quickly, almost hysterically. "Now I mean to say, what's a few dollars more or less when it's your own child at issue; and I know that you'd get the best for her, make the best possible development."

"If we can."

"So maybe, well let me put it this way then." He placed the most delicate of hands on the guest's wrist again, this time let it rest there. "Would there be maybe a ten percent give in your position? On the upward arc of course."

"Of course," the guest said, "of course upward, always upward. No one ever thinks downward, do they?"

He paused, sighed, looked at the man. "Levitation is a dime a dozen," he said. "We reject more levitators than we take. In its crude, unfocused state it's worthless except as a party trick. How many violinists are there for every concertmaster? He paused again and then shrugged. "Look here," he said.

The guest put the binder under his arm, lifted his index finger and as clumsily as Jessica moved upward two or three feet, dangled his feet, kicked for effect and then swam inexpertly through the air to his chair. Breathing unevenly he hung there for an instant, then released the field and dropped into the chair. The father watched this intently.

"You see?" the guest said, taking out a handkerchief and wiping his wet forehead. "And I'll never be anything more than a field investigator."

That hung in the air for a moment. The father seemed to dwindle within himself, dropped his gaze, looked at the floor thoughtfully. At length he lifted his head, looked at the guest again and very awkwardly rose from his own chair, hanging in the air tensely.

"All right," he said. "I see. I'll sign anything."

And so the negotiations ended. Another day; another dollar, the guest thought. ■

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LARRY NIVEN

bigger than worlds

The trouble with living on a planet is that it tends to make most of the inhabitants think small.

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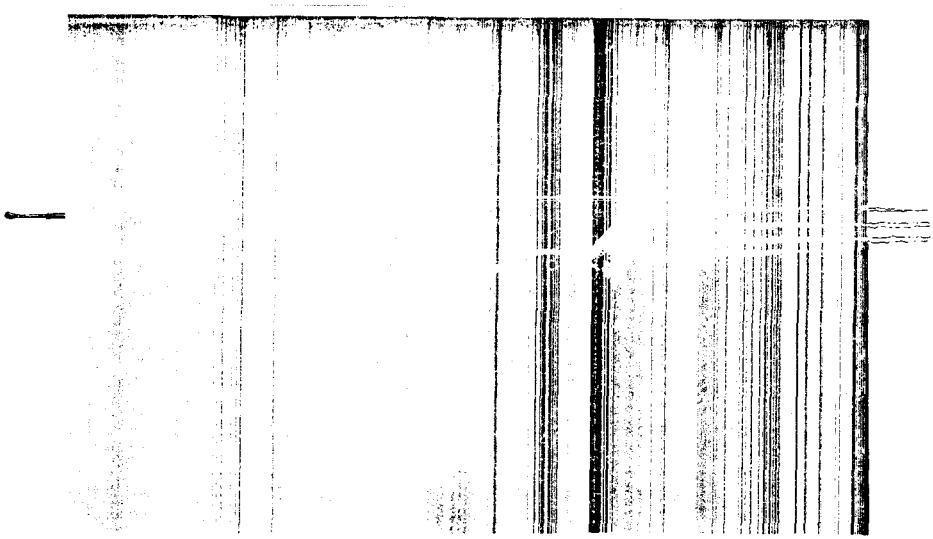

Just because you've spent all your life on a planet doesn't mean that everyone always will. Already there are alternatives to worlds. The Russian space station may have killed its inhabitants, and the American Skylab has had its troubles, but the Apollo craft have a good record. They have never killed a man in space.

Alas, they all lack a certain something. Gravity. Permanence. We want something to live on, or in, something superior to a world: safer, or more mobile, or roomier. Otherwise, why move?

It's odd how much there is to say about structures larger than worlds, considering that we cannot yet begin to build any one of them. On the basis of size, the Dyson Sphere—a spherical shell around a sun—comes about in the middle. But let's start small and work our way up.

THE MULTIGENERATION SHIP

Robert Heinlein's early story, "Universe," has been imitated countless times by most of the writers in the business.

The idea was this: Present-day physics poses a limit on the speed of an interstellar vehicle. The ships we send to distant stars will be on one-way journeys, at least at first. They will have to carry a complete ecology; they couldn't carry enough food and oxygen in tanks. Because they will take generations to complete their journeys, they must also carry a viable and complete society.

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Clearly we're talking about quite a large ship, with a population in the hundreds at least: high enough to prevent genetic drift. Centrifugal force substitutes for gravity. We're going to be doing a lot of that. We spin the ship on its axis, and put all the things that need full gravity at the outside, along the hull. Plant rooms, exercise rooms, et cetera. Things that don't need gravity, like fuel and guidance instruments, we line along the axis. If our motors thrust through the same axis, we will have to build a lot of the machinery on tracks, because the aft wall will be the floor when the ship is under power.

The "Universe" ship is basic to a discussion of life in space. We'll be talking about much larger structures, but they are designed to do the same things on a larger scale: to provide a place to live, with as much security and variety and pleasure as Earth itself offers—or more.

GRAVITY

Gravity is basic to our life style. It may or may not be necessary to life itself, but we'll want it if we can get it, whatever we build.

I know of only four methods of generating gravity aboard spacecraft.

Centrifugal force seems to be most likely. There is a drawback: coriolis effects would force us to relearn how to walk, sit down, pour coffee, throw a baseball. But its effects would decrease with increasing moment arm—that is, with larger structures. On a Ring City, for example, you'd never notice it.

Our second choice is to use actual mass: plate the floor with neutronium, for instance, at a density of fifty quadrillion tons per cubic foot; or build the ship around a quantum black hole, invisibly small and around as massive as, say, Phobos. But this will vastly increase our fuel consumption if we expect the vehicle to go anywhere.

Third choice is to generate gravity waves. This may remain forever beyond our abilities. But it's one of those things that people are going to keep trying to build, forever, because it would be so damn useful. We could put laboratories on the sun, or colonize Jupiter. We could launch ships at a million gravities, and the passengers would feel nothing.

The fourth method is to accelerate all the way, making turnover at the midpoint and decelerating the rest of the way. This works fine. Over interstellar distances it would take an infinite fuel supply—which we may have, in the Bussard ramjet. A Bussard ramjet would use an electromagnetic field to scoop up the interstellar hydrogen ahead of

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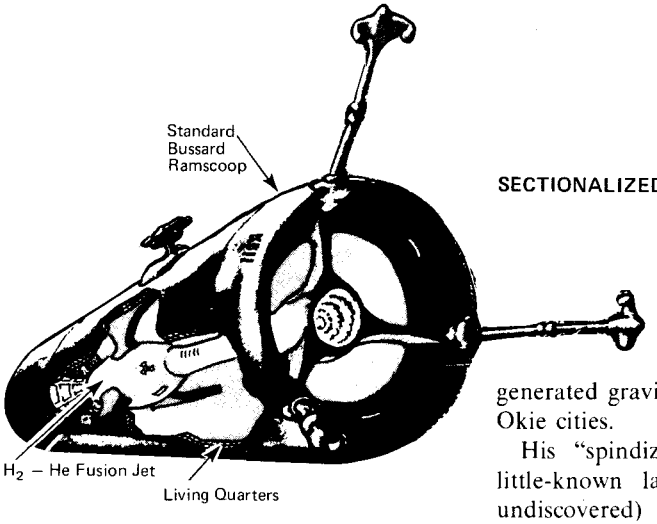

SECTIONALIZED STARSHIP

it—with an intake a thousand miles or more in diameter—compress it, and burn it as fuel for a fusion drive. Now the multigeneration ship would become unnecessary as relativity shortens our trip time: four years to the nearest star, twenty-one years to the galactic hub, twenty-eight to Andromeda galaxy—all at one gravity acceleration.

The Bussard ramjet looks unlikely. It's another ultimate, like generated gravity. Is the interstellar medium sufficiently ionized for such finicky control? Maybe not. But it's worth a try.

Meanwhile, our first step to other worlds is the "Universe" ship—huge, spun for gravity, its population in the hundreds, its travel time in generations.

FLYING CITIES

James Blish used a variant of generated gravity in his tales of the Okie cities.

His "spindizzy" motors used a little-known law of physics (still undiscovered) to create their own gravity and their own motive force. Because the spindizzy motors worked better for higher mass, his vehicles tended to be big. Most of the stories centered around Manhattan Island, which had been bodily uprooted from its present location and flown intact to the stars. Two of the stories involved whole worlds fitted out with spindizzies. They were even harder to land than the flying cities.

But we don't really need spindizzies or generated gravity to build flying cities.

In fact, we don't really need to fill out Heinlein's "Universe" ship. The outer hull is all we need. Visualize a ship like this:

1. Cut a strip of Los Angeles, say, ten miles long by a mile wide.
2. Roll it in a hoop. Buildings and streets face inward.
3. Roof it over with glass or something stronger.

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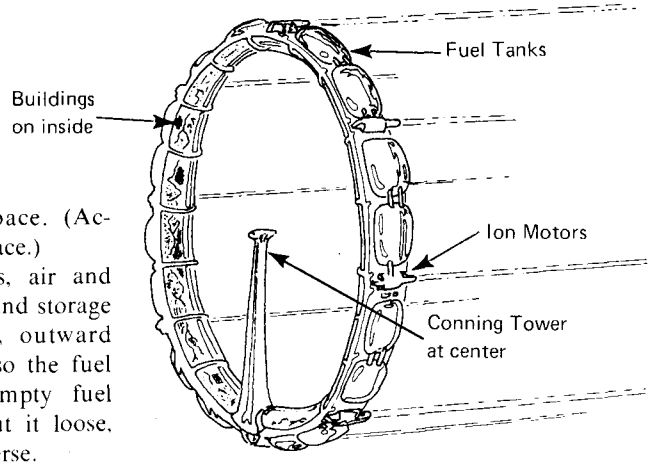

A FLYING CITY

4. Transport it to space. (Actually we'll build it in space.)

5. Put reaction motors, air and water recycling systems, and storage areas in the basement, outward from the street level. Also the fuel tanks. Jettisoning an empty fuel tank is easy. We just cut it loose, and it falls into the universe.

6. Use a low-thrust, high-efficiency drive: ion jets, perhaps. The axis of the city can be kept clear. A smaller ship can rise to the axis for sightings before a course change; or we can set the control bridge atop a slender fin. A ten-mile circumference makes the fin a mile and a half tall if the bridge is at the axis; but the strain on the structure would diminish approaching the axis.

What would it be like aboard the Ring City? One gravity everywhere, except in the bridge. We may want to enlarge the bridge to accommodate a schoolroom; teaching physics would be easier in free fall.

Otherwise it would be a lot like the multigeneration ship. The populace would be less likely to forget their destiny, as Heinlein's people did. They can see the sky from anywhere in the city; and the only fixed stars are Sol and the target star.

It would be like living anywhere, except that great attention must be paid to environmental quality. This can be taken for granted throughout this article. The more thoroughly we control our environment, the more dangerous it is to forget it.

INSIDE-OUTSIDE

The next step up in size is the hollow planetoid. I got my designs from a book of scientific speculation, "Islands in Space," by Dandridge M. Cole and Donald W. Cox.

Step One: Construct a giant solar mirror. Formed under zero gravity conditions, it need be nothing more than an echo balloon sprayed with something to harden it, then cut in half and silvered on the inside. It would be fragile as a butterfly, and *huge.*

Step Two: Pick a planetoid. Ideally, we need an elongated

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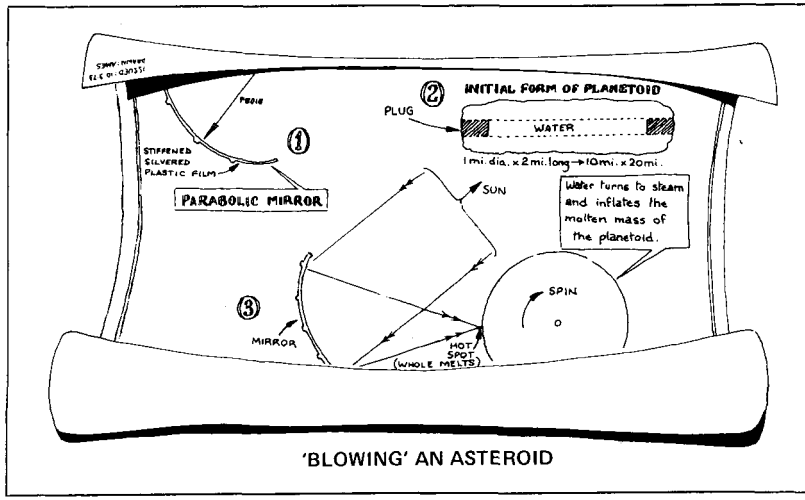
chunk of nickel-iron, perhaps one mile in diameter and two miles long.

Step Three: Bore a hole down the long axis.

Step Four: Charge the hole with tanks of water. Plug the openings, and weld the plugs, using the solar mirror.

Step Five: Set the planetoid spinning slowly on its axis. As it spins, up into an iron balloon some ten miles in diameter and twenty miles long, if everybody has done his job right.

The hollow world is now ready for tenants. Except that certain things have to be moved in: air, water, soil, living things. It should be possible to set up a closed ecology. Cole and Cox suggested setting up the solar mirror at one end



'BLOWING' AN ASTEROID

bathe the entire mass in the concentrated sunlight from the solar mirror. Gradually the flying iron mountain would be heated to melting all over its surface. Then the heat would creep inward, until the object is almost entirely molten.

Step Six: The axis woud be the last part to reach melting point. At that point the water tanks explode. The pressure blows the planetoid and using it to reflect sunlight back and forth along the long axis. We might prefer to use fusion power, if we've got it.

Naturally we spin the thing for gravity.

Living in such an inside-out world would be odd in some respects. The whole landscape is overhead. Our sky contains farms and houses and so forth. If we

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came to space to see the stars, we'd have to go down into the basement.

We get our choice of gravity and weather. Weather is easy. We give the asteroid a slight equatorial bulge, to get a circular central lake. We shade the endpoints of the asteroid from the sun, so that it's always raining there, and the water runs downhill to the central lake. If we keep the gravity low enough, we should be able to fly with an appropriate set of muscle-powered wings; and the closer we get to the axis, the easier it becomes. (Of course, if we get too close the wax melts and the wings come apart . . .)

MACROLIFE

Let's back up a bit, to the Heinlein "Universe" ship. Why do we want to land it?

If the ship has survived long enough to reach its target star, it could probably survive indefinitely; and so can the nth-generation society it now carries. Why should their descendants live out their lives on a primitive Earthlike world? Perhaps they were born to better things.

Let the "Universe" ship become their universe, then. They can mine new materials from the asteroids of the new system, and use them to enlarge the ship when necessary, or build new ships. They can loosen the population control laws. Change stars when convenient. Colonize space itself, and let the planets become mere way-stations. See the universe!

The concept is called *Macrolife:* large, powered, self-sufficient environments capable of expanding or reproducing. Put a drive on the Inside-Outside asteroid bubble and it becomes a Macrolife vehicle. The ring-shaped flying city can be extended indefinitely from the forward rim. Blish's spindizzy cities were a step away from being Macrolife; but they were too dependent on planet-based society.

A Macrolife vehicle would have to carry its own mining tools and chemical laboratories, and God knows what else. We'd learn what else accidentally, by losing interstellar colony ships. At best a Macrolife vehicle would never be as safe as a planet, unless it was as big as a planet, and perhaps not then. But there are values other than safety. An airplane isn't as safe as a house, but a house doesn't go anywhere. Neither does a world.

WORLDS

The terraforming of worlds is the next logical step up in size. For a variety of reasons, I'm going to skip lightly over it. We know both too much and too little to talk coherently about what makes a world habitable.

But we're learning fast, and will learn faster. Our present pollution problems will end by telling us ex-

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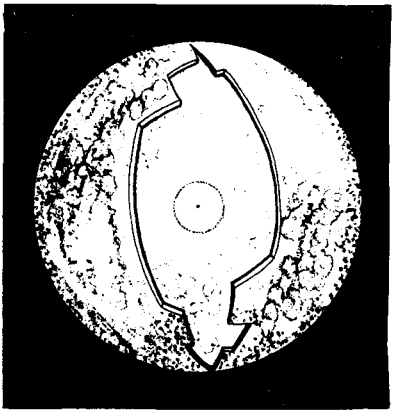

DYSON SPHERE (all around sun)

actly how to keep a habitable environment habitable, how to keep a stable ecology stable, and how to put it all back together again after it falls apart. As usual, the universe will teach us or kill us. If we live long enough to build ships of the "Universe" type, we will know what to put inside them. We may even know how to terraform a hostile world for the convenience of human colonists, having tried our techniques on Earth itself.

Now take a giant step.

DYSON SPHERES

Freeman Dyson's original argument went as follows, approximately.

No industrial society has ever reduced its need for power, except by collapsing. An intelligent optimist will expect his own society's need for power to increase geometrically, and will make his plans accordingly. According to Dyson, it will not be an impossibly long time before our own civilization needs all the power generated by our sun. Every last erg of it. We will then have to enclose the sun so as to control all of its output.

What we use to enclose the sun is problematic. Dyson was speaking of shells in the astronomical sense: solid or liquid, continuous or discontinuous, anything to interrupt the sunlight so that it can be turned into power. One move might be to convert the mass of the solar system into as many little ten-by-twenty-mile hollow iron bubbles as will fit. The smaller we subdivide the mass of a planet, the more useful surface area we get. We put all the little asteroid bubbles in circular orbits at distances of about one Earth orbit from the sun, but differing enough that they won't collide. It's a gradual process. We start by converting the existing asteroids. When we run out, we convert Mars, Jupiter, Saturn, Uranus . . . and eventually, Earth.

Now, aside from the fact that our need for power increases geometrically, our population also increases geometrically. If we didn't need the power, we'd still need the room in those bubbles. Eventually we've blocked out all of the sunlight. From outside, from another star, such a system would be a great globe radiating enormous energy in the deep infrared.

What some science-fiction writers

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have been calling a Dyson Sphere is something else: a hollow spherical shell, like a ping pong ball with a star in the middle. Mathematically at least, it is possible to build such a shell without leaving the solar system for materials. The planet Jupiter has a mass of 2 x 10^{30} grams, which is most of the mass of the solar system excluding the sun. Given massive transmutation of elements, we can convert Jupiter into a spherical shell ninety-three million miles in radius and maybe ten to twenty feet thick. If we don't have transmutation, we can still do it, with a thinner shell. There are at least ten Earth-masses of building material in the solar system, once we throw away the useless gases.

The surface area inside a Dyson Sphere is about a billion times that of the Earth. Very few galactic civilizations in science fiction have included as many as a billion worlds. Here you'd have that much territory within walking distance, assuming you were immortal.

Naturally we would have to set up a biosphere on the inner surface. We'd also need gravity generators. The gravitational attraction inside a uniform spherical shell is zero. The net pull would come from the sun, and everything would gradually drift upward into it.

So. We spot gravity generators all over the shell, to hold down the air and the people and the buildings. "Down" is outward, toward the stars.

We can control the temperature of any locality by varying the heat-retaining properties of the shell. In fact, we may want to enlarge the shell, to give us more room or to make the permanent noonday sun look smaller. All we need do is make the shell a better insulator: foam the material, for instance. If it holds heat too well, we may want to add radiator fins to the outside.

Note that life is not necessarily pleasant in a Dyson Sphere. We can't see the stars. It is always noon. We can't dig mines or basements. And if one of the gravity generators ever went out, the resulting disaster would make the end of the Earth look trivial by comparison.

But if we need a Dyson Sphere, and if it can be built, we'll probably build it.

Now, Dyson's assumptions (expanding population, expanding need for power) may hold for any industrial society, human or not. If an astronomer were looking for inhabited stellar systems, he would be missing the point if he watched only the visible stars. The galaxy's most advanced civilizations may be spherical shells about the size of the Earth's orbit, radiating as much power as a Sol-type sun, but at about 10μ wavelength—in the deep infrared . . .

. . . assuming that the galaxy's most advanced civilizations are

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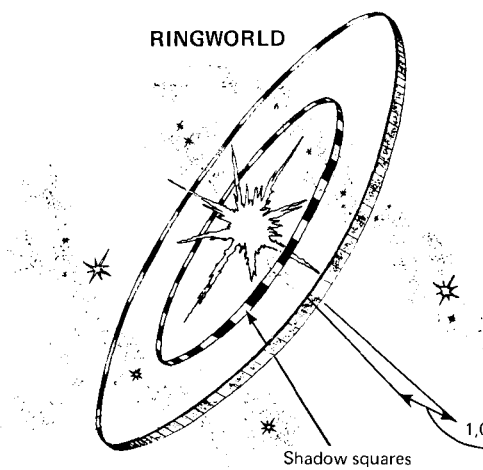
protoplasmic. But beings whose chemistry is based on molten copper, say, would want a hotter environment. They might have evolved faster, in temperatures where chemistry, and biochemistry, would move *far* faster. There might be a lot more of them than of us. And their red-hot Dyson Spheres would look deceptively like red giant or supergiant stars. One wonders.

In "The Wanderer," novelist Fritz Leiber suggested that most of the visible stars have already been surrounded by shells of worlds. We are watching old light, he suggested, light that was on its way to Earth before the industrial expansion of galactic civilization really hit its stride. Already we see part of the result: the opaque dust clouds astronomers find in the direction of the galactic core are not dust clouds, but walls of Dyson Spheres blocking the stars within.



RINGWORLD

I have come up with an intermediate step between Dyson Spheres and planets. Build a ring ninety-three million miles in radius—one Earth orbit—which would make it six hundred million miles long. If we have the mass of Jupiter to work with, and if we make it a million miles wide, we get a thickness of about a thousand meters. The Ringworld would thus be much sturdier than a Dyson Sphere.

There are other advantages. We can spin it for gravity. A rotation on its axis of 770 miles/second would give the Ringworld one gravity outward. We wouldn't even have to roof it over. Put walls a thousand miles high at each rim, aimed inward at the sun, and very little of the air will leak over the edges.

Set up an inner ring of shadow squares—light orbiting structures to block out part of the sunlight—and we can have day-and-night cycles in whatever period we like. And we can see the stars—unlike the inhabitants of a Dyson Sphere.

The thing is roomy enough: three million times the area of the Earth. It will be some time before anyone complains of the crowding.

As with most of these structures, our landscape is optional, a chal-

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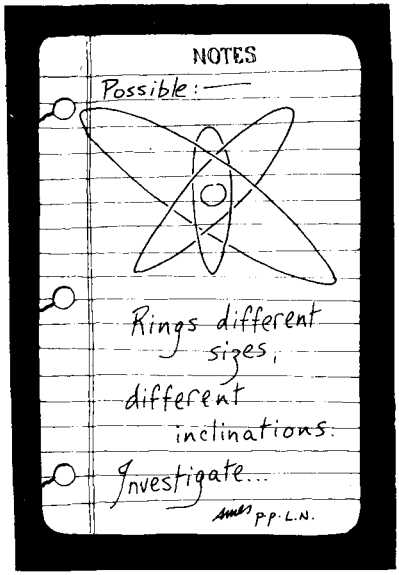

lenge to engineer and artist alike. A look at the outer surface of a Ringworld or Dyson Sphere would be most instructive. Seas would show as bulges, mountains as dents. Riverbeds and river deltas would be sculptured in; there would be no room for erosion on something as thin as a Ringworld or a Dyson Sphere. Seas would be flat-bottomed—as we use only the top of a sea anyway—and small, with convoluted shorelines. Lots of beachfront. Mountains would exist only for scenery and recreation.

A large meteor would be a disaster on such a structure. A hole in the floor of the Ringworld, if not plugged, would eventually let all the air out, and the pressure differential would cause storms the size of a world, making repairs difficult.

The Ringworld concept is flexible. Consider:

1. More than one Ringworld can circle a sun. Imagine many Ringworlds, noncoplanar, of slightly differing radii—or of widely differing radii—inhabited by very different intelligent races.

2. We'd get seasons by bobbing the sun up and down. Actually the Ring would do the bobbing; the sun would stay put. (One Ring to a sun for this trick.)

3. To build a Ringworld when all the planets in the system are colonized to the hilt (and, baby, we don't *need* a Ringworld until it's gotten that bad!) pro tem structures are needed. A structure the size of a world and the shape of a pie plate, with a huge rocket thruster underneath and a biosphere in the dish, might serve to house a planet's population while the planet in question is being disassembled. It circles the sun at 770 miles/second, firing outward to maintain its orbit. The depopulated planet becomes two more pie plates, and we wire them in an equilateral triangle and turn off the thrusters, evacuate more planets and start building the Ringworld.

DYSON SPHERES II

I pointed out earlier that gravity generators look unlikely. We may never be able to build them at all. Do we really need to assume grav-

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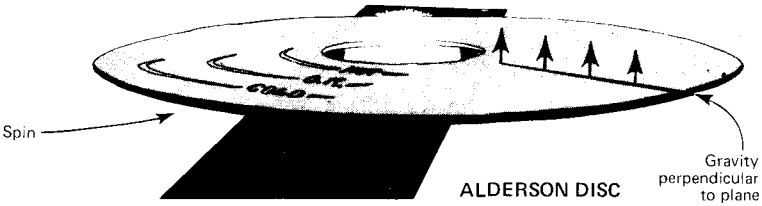

ALDERSON DISC

ity generators on a Dyson Sphere? There are at least two other solutions.

We can spin the Dyson Sphere. It still picks up all the energy of the sun, as planned; but the atmosphere collects around the equator, and the rest is in vacuum. We would do better to reshape the structure like a canister of movie film; it gives us greater structural strength. And we wind up with a closed Ringworld.

Or, we can live with the fact that we can't have gravity. According to the suggestion of Dan Alderson, PhD, we can build two concentric spherical shells, the inner shell transparent, the outer transparent or opaque, at our whim. The biosphere is between the two shells.

It would be fun. We can build anything we like within the free-fall environment. Buildings would be fragile as a butterfly. Left to themselves they would drift up against the inner shell, but a heavy thread would be enough to tether them against the sun's puny gravity. The only question is, can humanity stand long periods of free fall?

HOLD IT A MINUTE

Have you reached the point of vertigo? These structures are hard to hold in your head. They're so flipping *big*. It might help if I tell you that, though we can't *begin* to *build* any of these things, practically anyone can handle them mathematically. Any college freshman can prove that the gravitational attraction inside a spherical shell is zero. The stresses are easy to compute (and generally too strong for anything we can make). The mathematics of a Ringworld are those of a suspension bridge with no endpoints.

OK, go on with whatever you were doing.

THE DISC

What's bigger than a Dyson Sphere? Dan Alderson, designer of the Alderson Double Dyson Sphere, now brings you the Alderson Disc. The shape is that of a phonograph record, with a sun situated in the little hole. The radius is about that of the orbit of Mars or Jupiter. Thickness: a few thousand miles.

Gravity is uniformly vertical to

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the surface (freshman physics again) except for edge effects. Engineers do have to worry about edge effects; so we'll build a thousand-mile wall around the inner well to keep the atmosphere from drifting into the sun. The outer edge will take care of itself.

This thing is massive. It weighs far more than the sun. We ignore problems of structural strength. Please note that we can inhabit *both* sides of the Alderson Disc.

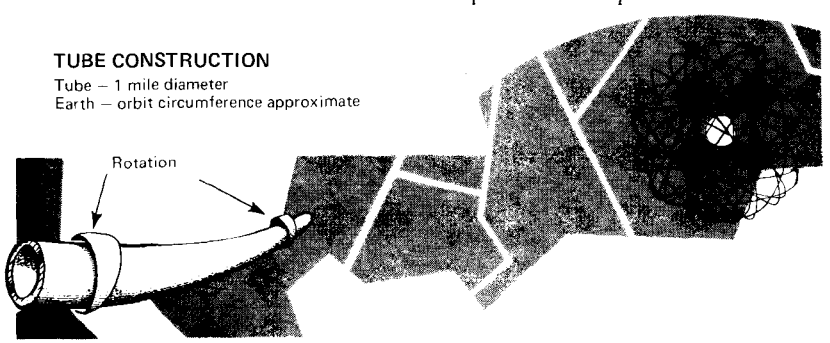
The sun will always be on the horizon—unless we bob it, which we do. (This time it is the sun that does the bobbing.) Now it is always dawn, or dusk, or night.

The Disc would be a wonderful place to stage a Gothic or a sword-and-sorcery novel. The atmosphere is right, and there are real monsters. Consider: we can occupy only a part of the Disc the right distance from the sun. We might as well share the Disc and the cost of its construction with aliens from hotter or colder climes. Mercurians and Venusians nearer the sun, Martians out toward the rim, aliens from other stars living wherever it suits them best. Over the tens of thousands of years, mutations and adaptations would migrate across the sparsely settled borders. If civilization should fall, things could get eerie and interesting.

COSMIC MACARONI

Pat Gunkel has designed a structure analogous to the Ringworld. Imagine a hollow strand of macaroni six hundred million miles long and not particularly thick—say a mile in diameter. Join it in a loop around the sun.

Pat calls it a *topopolis*. He points out that we could rotate the thing as in the illustration—getting gravity through centrifugal force—because of the lack of torsion effects. At six hundred million miles long and a mile wide, the curvature of the tube is negligible. We can set up a biosphere on the inner surface, with a sunlight tube down the axis and photoelectric power sources on



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the outside. So far, we've got something bigger than a world but smaller than a Ringworld.

But we don't have to be satisfied with one loop! We can go round and round the sun, as often as we like, as long as the strands don't touch. Pat visualizes endless loops of rotating tube, shaped like a hell of a lot of spaghetti patted roughly into a hollow sphere with a star at the center (and now we call it an *aegagropilous topopolis).* As the madhouse civilization that built it continued to expand, the coil would reach to other stars. With the interstellar links using power supplied by the inner coils, the tube city would expand through the galaxy. Eventually our *aegagropilous galactotopopolis* would look like all the stars in the heavens had been embedded in hair.

THE MEGASPHERE

Mathematically at least, it is possible to build a really big Dyson Sphere, with the heart of a galaxy at its center. There probably aren't enough planets to supply us with material. We would have to disassemble some of the stars of the galactic arms. But we'll be able to do it by the time we need to.

We put the biosphere on the outside this time. Surface gravity is minute, but the atmospheric gradient is infinitesimal. Once again, we assume that it is possible for human beings to adapt to free fall. We live in free fall, above a surface area of tens of millions of light-years, within an atmosphere that doesn't thin out for scores of light-years.

Temperature control is easy: We vary the heat conductivity of the sphere to pick up and hold enough of the energy from the stars within. Though the radiating surface is great, the volume to hold heat is much greater. Industrial power would come from photoreceptors inside the shell.

Within this limitless universe of air we can build exceptionally large structures, Ringworld-sized and larger. We could even spin them for gravity. They would remain aloft for many times the lifespan of any known civilization before the gravity of the core stars pulled them down to contact the surface.

The Megasphere would be a pleasantly poetic place to live. From a flat Earth hanging in space, one could actually reach a nearby Moon via a chariot drawn by swans, and stand a good chance of finding selenites there. There would be none of this nonsense about carrying bottles of air along.

FINAL SOLUTION

One final step is to join two opposing life styles, the Macrolife tourist types and the sedentary types who prefer to restructure their home worlds.

The Ringworld rotates at 770 miles/second. Given appropriate conducting surfaces, this rotation

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could set up enormous magnetic effects. These could be used to control the burning of the sun, to cause it to fire off a jet of gas along the Ringworld axis of rotation. The sun becomes its own rocket. The Ringworld follows, tethered by gravity.

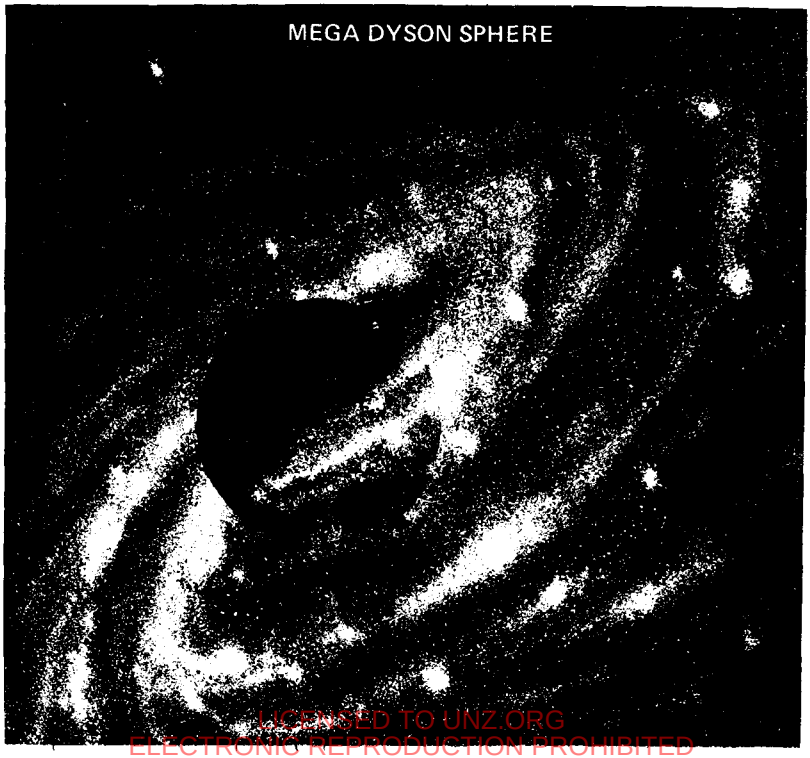
By the time we run out of sun, the Ring is moving through space at Bussard ramjet velocities. We continue to use the magnetic effect to pinch the interstellar gas into a fusion flame, which now becomes our sun and our motive power.

The Ringworld makes a problematical vehicle. What's it *for?* You can't land the damn thing anywhere. A traveling Ringworld is not useful as a tourist vehicle; anything you want to see, you can put on the Ringworld itself . . . unless it's a lovely multiple star system like Beta Lyrae; but you just can't get that *close* on a flying Ringworld.

A Ringworld in flight would be a bird of ill omen. It could only be fleeing some galaxy-wide disaster.

Now, galaxies do explode. We have pictures of it happening. The probable explanation is a chain reaction of novas in the galactic core. Perhaps we should be maintaining a space watch for fleeing Ringworlds . . . except that we couldn't do anything about it.

We live on a world: small, immobile, vulnerable and unprotected. But it will not be so forever. ■



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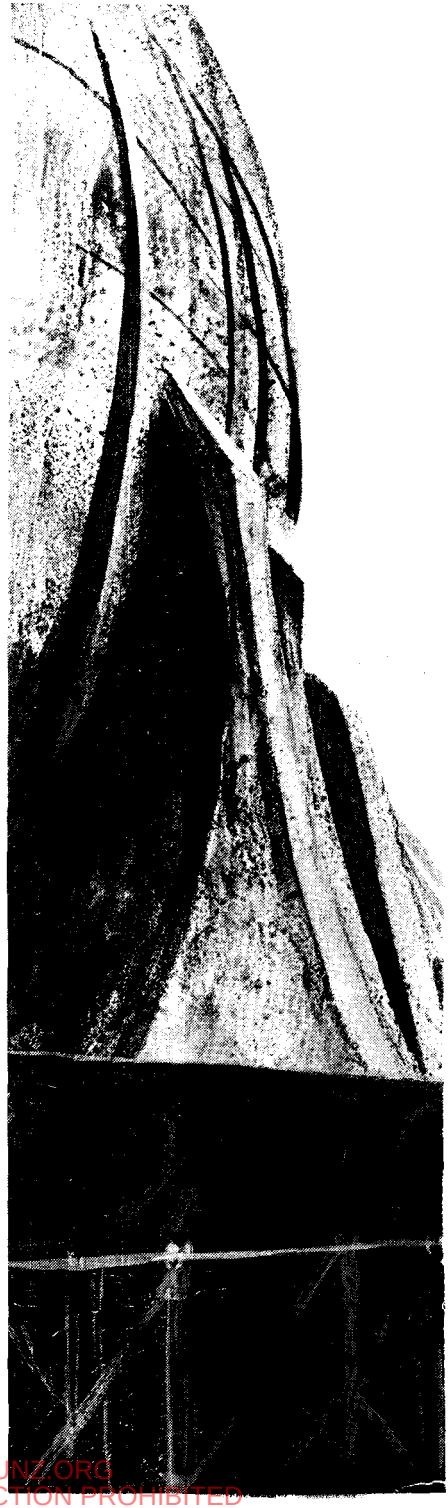
earth, air, fire and water

Part Two of Three Parts.
The problem with a conspiracy is that a certain number of people must be let in on the secret. If the conspiracy is planetwide in scope, and must be kept absolutely secret, how do you get the job done without telling one person too many?

STEPHEN NEMETH
WILLIAM WALLING



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SYNOPSIS

Shortly after Apollo XI's historic flight, as Compressed Air Corporation board chairman ALESSANDRO VOLPONE *and his aged financial manager,* LEONARD COLO, *seek an award to build equipment for the US Department of Transportation's innovative Interurban Tube Transit System (ITTS), whose computer-operated, magnetically levitated trains will be driven pneumatically through semi-evacuated, subsurface tubes at near-aircraft speeds, a brash young CompAirCorp staff physicist named* ARNE SEYMOUR *suggests to Volpone an unspecified scheme to checkmate the long-standing "nuclear stalemate" between the Communist and Western worlds.*

By 1988 Volpone's company—now called Volpone Industries—has grown into a corporate giant; billionaire industrialist Volpone has himself become US Undersecretary of Transportation. But the global power balance has deteriorated; the USSR and China have patched up their differences, banding together to form a monolithic Communist power bloc—the Sino-Sov Coalition—while America licks its wounds in the aftermath of an inconclusive, Vietnam-like Mideast war, after battling beside Israel against a Sino-Sov-armed Arab World, with oil the prize. Denied Mideast petroleum, America faces paralyzing fuel shortages and an uncertain future.

LEWIS CRAFT, *ex-West Point footballer and newly promoted major in the US Army Corps of Engineers, is therefore amazed to find himself torn away from duty at an exploratory Earth resources station in Antarctica. Sworn to secrecy at the Pentagon, he is told that, over crusty* GENERAL THAYER'S *strenuous objections, he is merely one of many Army engineers who have reached field grade only to be snatched away to begin detached service under cognizance of DoT—in Craft's case, acting as consultant on the Reno-Sacramento ITTS loop abuilding in northern California.*

Craft begins a fifteen-day delay-en-route by flying to Los Angeles to see ex-girlfriend BETTY DANCER, *personal secretary to magazine publisher* HOO HANFORD. *After a romantic reunion, Lew and Betty attend a Christmas party at Hanford's palatial hilltop mansion, where Senator* VICTOR LEWELLYN *exhibits keen interest in Craft's new assignment. Later, the senator inveighs upon Hoo and Betty to urge Craft to snoop around and discover, if he can, what's causing the "extraordinary money drain" afflicting the ITTS Project.*

Volpone, hosting a dinner party prior to the annual Volpone Industries stockholders meeting, comes under heavy fire for his corporation's failure to pay decent dividends despite enormous "paper" profits. Afterward, it develops that he and Colo have for years been doing a fraudulent juggling act with corporate funds, channeling vast sums into the

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as yet undisclosed conspiracy. Volpone, knowing discovery to be inevitable, worries, though he remains totally unrepentant.

Escorted to the Michigan Bluff construction site by VI Superintendent ART PARKINSON*—in actuality a CIA agent—Craft is surprisingly met by none other than Volpone, who "just happens" to be touring western ITTS installations. Inviting the major to accompany him in an inspection of the dig, Volpone reminds Craft of his secrecy oath, then shows him "the" National Redoubt—a self-contained subterranean "city" built under the cover story of ITTS construction, and sponsored by the Federal Government. The redoubt will stock compressed air and other consumables for thousands of tenants in the event of nuclear attack, which the undersecretary regards as imminent. Stunned by the disclosure, Major Craft pledges himself to the task.*

Next night, after returning home, Volpone slips away to a rock-walled sanctum deep beneath the Washington-Baltimore Redoubt to meet with his four co-conspirators: Senate Majority Leader RAYMOND STILLWORTH*, USAF Lieutenant General* MICHAEL PATT*, CIA Director* ROLFE EMMERSON*, and* NATHANIAL ABRAMS*, president of the United Television Network. Abrams leads a discussion of their preeminent crisis—money with which to continue the mysterious "Luft" Project.*

Volpone spends the evening learning which way the winds are blowing, deciding that collusion between Abrams and Stillworth, whose dictatorial ambitions—apparent through his clandestine leadership of the ultra-right-wing American Rangers—is now all but unconcealed.

Sources of revenue again become the heated topic of debate. Volpone proposes going to his "friends" for interim financing. Waxing sarcastic, Stillworth guesses his "friends" to be Mafiosi. *But General Patt eventually casts the deciding vote, much to Stillworth's consternation, after insisting that money is a must—from anywhere. Stillworth is furious in defeat.*

Don VITO VICO, capo mafioso *of the most powerful "family" on the Eastern Seaboard, is invited to Volpone's opulent Long Island estate. After hearing his plea for funds, Vico confides that, unbeknownst to Volpone, Mafia financing enabled the industrialist's father to found CompAirCorp during Depression years.*

Volpone swears the Don to silence, then reveals that Project Lifeboat, their "short-term" counter to threats of Sino-Sov aggression, has effected forty-one gigantic subterranean redoubts scattered from Maine to Hawaii, each destined to sustain eighteen thousand computer-warned occupants for up to twenty-five years. And Project Luft, the century-long plan first outlined by Arne Seymour two decades before—their "long-range" solution—has been gradually but steadily storing Earth's

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atmosphere in huge, submerged, offshore pressure vessels. If carried to ultimate fruition generations hence, the air depletion program could conceivably depopulate most of the Northern Hemisphere, if not the entire planet.

Part 2

VII

February, 1988

The sun hung low in a crystalline afternoon sky. The evening wind, quickening over snowy ridges bordering Squaw Valley, sent plumes of powder cascading from far-off slopes and made the ascending chair-lift sway giddily beneath them as Betty Dancer half-shouted, "One more run and I've had it. How about you?"

Lew Craft nodded. "I could use a hot shower, and dinner. I'll race you down to the lodge."

Betty made a face, trying in vain to tuck her windblown hair back under the fur-lined parka's hood. "Not me, you won't. You schuss like a bullet, and take such *crazy* chances."

"Absolute control at all times," scoffed Craft. "Skiing consists of applied muscular dynamics, and the intuitive ability—"

"Oh, shut up!"

They slid off together onto the packed snow and poled out of reach of the rotating chair. Betty squinted against the westering sun. "Lew, what's that . . . roof?" She pointed.

"It's the summit A-frame shelter," said Craft, "covering the ITTS emergency escape elevator shaft."

"Reaching down to where you're working?"

"Not quite yet. The chord-line runs haven't met and linked up. Nothing's down there now but solid granite."

The girl frowned. "How do they know the tunnels will meet exactly? I mean, Sacramento's back there in the valley, and Reno's beyond the Sierra. How do they arrange a thing like that?"

"The same way porcupines make love—*very* carefully."

"Smart aleck! You said 'chord-line' runs. I thought ITTS trains went from place to place in a series of loops."

"The short suburban feeders do that," explained Craft. "Interurban runs dip to a preselected depth just as the shorties do, then strike straight line chords that would be tangent to the surface midpoint if they were lifted aboveground." Seeing her blank look, he said, "OK; try it this way. If you took an orange and pushed a needle through the skin at right angles to the vertical centerline of the orange, what would you have?"

Betty dimpled. "An orange with a needle pushed through it."

"Do I have to shove snow down the neck of your parka?"

"Brute!" She suppressed a giggle. "Sorry; I'll be good. So long runs loop down, then zip off in straight

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lines to wherever they're going, then loop back up again. What's your job down there?"

"Answering a lot of damn-fool questions, mostly," he said. "Heavy equipment maintenance is my gig. I got my feet wet by doing a down-time study of the major heavy implements we use—earth-movers, high-temperature boring rigs, elevators, like that. Why, luv?"

"I was just curious," she said.

"You?" Craft eyed her closely. "Uh-uh, you're just not a nosy broad, Betty. What started all the questions?"

Betty shot him a guilty glance. "Lew, if I told you that Senator Lewellyn and Hoo asked me to get you to snoop around and find out what's funny about ITTS, what would you say?"

Craft stiffened slightly. "Ha-ha funny, or phony funny?"

"Don't be cute. You know what I mean."

"As a matter of fact," he said, "I don't. Why should your boss and Senator Lewellyn be interested in ITTS?"

"Lewellyn thinks ITTS smells of fish. Hoo asked if I'd persuade you to help unravel the mystery, that's all."

"Mystery? The only mystery is why they'd bother. ITTS is a civilian job, Betty. Nothing about it's classified."

Betty looked sly. "You're hedging, Major mine," she said.

When Lew Craft became angry, it happened all at once and in a hurry. "Knock it off!" he said curtly.

"Hum-m-mph! That *proves* it." The girl threw out one ski, made a graceful turn, and schussed around the slope toward the head of the downhill run. The sun had touched the rim of hills. The wind keened along the exposed summit, wielding a knife edge of cold. Below, lights were coming on in Squaw Valley's purple depths.

Craft settled his goggles on the bridge of his nose with weary patience, and followed the girl. The summit was all but denuded of skiers now. He knew from the determined thrust of her jaw that Betty was in a pettish mood.

"Let's for God's sake not quarrel," he said lightly. "I hate it when our weekends wind up on a sour note. Please."

Betty thawed visibly. "All right," she agreed. "I didn't mean to start a fight. Lew, there's something you should know." Betty ran her tongue over chapped lips. "You've heard of DoT Undersecretary Alessandro Volpone, haven't you?"

"Who hasn't?" Craft brightened. "I met him just last month."

The girl looked very surprised. "You . . . *met* him?"

"Yep. He happened to be out here inspecting the ITTS dig when I reported aboard. He seems like a real dynamic guy."

"You're not kidding me? About meeting him, I mean?"

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"In the flesh, Betty. What's the big deal about meeting Volpone?"

Betty Dancer pulled the parka's hood more snugly about her ears. "Only *you* could ask a question like that! Hoo decided to run an article about Mr. Volpone. A great layout: pictures, biographical tidbits, color stuff on the man himself. And he does make fascinating copy: the wealthiest industrialist since Getty, stepping away from his life's work to undertake the burden of ITTS, and so forth. The writers did a fabulous job.

"But it seems someone up there doesn't like the idea of articles about Alessandro Volpone appearing in *Swinger.* Hoo got some calls from UTVN's attorneys, then another high-powered lawyer showed up and had a closed-door chat with him. Finally, just last week, UTVN board chairman Nathanial Abrams dropped by in person. When he left, Hoo acted pretty glum."

"This Abrams, is he a big wheel?"

"Medium large," informed Betty. "Abrams is powerful in the world of the boob tube. He also owns two or three magazines."

"What's the connection between Abrams and Volpone?"

Betty told him she had no idea. "As far as Hoo can find out, they're just social friends. But Hoo was really upset about it, especially after the threatening call."

"The . . . what?"

"Someone whose voice was mushy, like he was talking through wadded cheesecloth, or something, told Hoo over the audio-only phone that if he didn't nix *the* article, he'd burn in hell forever."

Craft rubbed his jaw with a bemused expression. "It brings to mind a vivid picture: Hoo Hanford on the barbecue, surrounded by hordes of lovely, nude girls armed with teensy pitchforks—"

"That isn't funny. Hoo was worried sick."

"Yeah, I guess threatening calls aren't too funny at that." Craft stuck his ski poles into the snow, clapping his shoulders with mittened hands. "Hey, it's getting dark. Take off! We can talk about it over dinner."

Betty pulled down her goggles. "Do I get a headstart?"

Craft waved one ski pole. "Sure. I'll wait till you're six chains, three cubits, and a long spit ahead. Take off!"

He watched Betty pitch off and fly down the first steep slope in a straight run, then swing right in a flurry of powder. He moved his skis back and forth twice and followed her, skiing easily, his mind alive with fresh doubts.

First General Thayer had warned of 'something big' he suspected to be brewing in the ITTS Project. Then Alessandro Volpone had made his devastating revelation of the National Redoubt, which *was* tied to ITTS, confirming and at the

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same time invalidating the general's warning, easing Craft's mind on one score, and scaring the liver out of him on another.

Now Betty had succeeded in again raising the question. It was damned peculiar; a US Senator had inveighed upon a millionaire publisher to cajole his personal secretary into persuading *him*, a mere GI engineer, to ferret out the "mystery" surrounding ITTS. It began to sound like some two-bit TV melodrama: baffled officials, having gotten wind of ITTS hanky-panky, were turning to their only remaining hope, intrepid Major Lewis Craft . . .

Nonsense! Senator Lewellyn was a member of the Senate Finance Committee; he'd mentioned the fact in Craft's presence. Surely a senator would have access to such information. At any rate, it was a trifle wearisome to have sundry individuals spring out of the woodwork, urging you to spy for them. The next gent who approached him was in for a very hard time.

Betty had finished stacking her skis in the shed behind the lodge. "What kept you?" she teased as he trudged in. "Did you fall?"

"'Course not! I took it easy to keep from running over you."

"I won." The girl wrinkled her nose. "I get to shower first."

Craft performed a mock bow. "Be my guest. I think I'll go over and surround a brandy or two while you pretty up."

"Go ahead, souse! I'll meet you upstairs." Betty smiled, pecking him on the cheek, and skipped up the stairs and into the lodge.

Craft stood in silent admiration of the way her fanny wiggled under the tight ski pants, then sighed and stepped back outdoors. He strolled around the lodge, his breath steaming in the frosty air, admiring the sunset glow now illuminating higher ridges.

He had stepped off the curb, heading for the rathskeller a half-block away, when someone behind him called, "Lew."

Craft turned in the road, dodging a bus. The figure of a tall man was silhouetted by a streetlight. Startled, Craft came back to the curb. "Archer, you old crock! Where'n hell did you drop from?"

"Hi, Lew." Red Archer shook his hand warmly, grinning. "I spent a week's leave in San Francisco. Before I left Denver, the grapevine announced your arrival at the Sacto-Reno dig. I called the site; they told me you'd left the number of the lodge here for weekend emergency call. I thought it'd be fun to look you up."

"Great to see you, Red." Craft clapped Archer's shoulder. "Denver, huh? Let's go sit down over a brandy. You can fill me in."

"I can always use a brandy," said Archer, "but . . . look, Cobber, I don't mean to cramp your style. I saw you come down the mountain

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with that spectacular blonde bird a while ago . . ."

"Betty? She's upstairs, 'freshening up'," said Craft. "She has to go home right after dinner. We planned to take the bus down to Sacramento together. Then I have to kiss her good-bye."

"Tell me true," said Archer, "is that the same delicious blonde whose picture you had plastered all over your quarters in South Base?"

Craft looked pleased, walking with Archer toward the rathskeller. "Sure is," he said. "Betty works for *Swinger* magazine in Los Angeles. I thought I told you about her."

"Uh-huh; you did, Cobber. I just didn't believe you."

The basement bar, jammed with bumptious skiers, smelled of beer, tobacco smoke, and sweaty ski togs. The babble was countered effectively by a quadraphonic audio box blaring twelve-tone rock that could not have made sense even to its composer. Craft leaned between stand-up skiers at the bar, whistling up two glasses and a quarter-filled bottle of California brandy. He and Archer retired to a rear table little bigger than a dinner plate. "Here's to the Corps of Engineers!" toasted Craft. "Or what's left of it."

Archer was sober. "Lew," he said, "you knew me pretty well at South Base. Would you say I had paranoid tendencies?"

Craft paused, his grin lopsided. "Sure, not to mention being schizoid and a bit of a kook to boot."

"Can it, Cobber; I'm serious. Someone's been keeping close tabs on me, watching every move I make underground. It's getting spooky. But I'm sure no one followed me up here. I drove Carson Pass—a two-lane affair—and pulled off the road twice to douse the lights. No one was behind me."

Craft set his glass carefully in the watery ring on the table. "What made you think you might be followed, Red?"

Archer's jaw muscle worked nervously. "Habit, I suppose." He swallowed the contents of his glass in two gulps and reached for the bottle again. "Lew, do they watch you day and night, too?"

Craft was elaborately casual. "Not that I've noticed."

"Are you still mother-henning the big stuff?" asked Archer. "In the tube dig, I mean. Not the . . . other."

"Craft settled in his chair, his face expressionless. Another one! First Thayer, then Betty, and now—out of the blue—Archer. "Still working with earth-movers and boring rigs," he said.

Archer nodded. "Me, too . . ." He glanced secretively around the crowded bar. "I . . . I've got to say something in confidence, Lew. I've *got* to. Listen, unless I've been flummoxed, we're building a redoubt under the Rockies exactly like the one you're doing."

"Red, you talk too much," said Lew Craft.

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Archer leaned forward. "Knock off the jive, and *listen.*"

"You signed a security oath," warned Craft. "Besides, you're fishing, and I don't like it one damned bit." Craft started to rise. He was practically out of his chair when Archer grabbed his wrist.

"*Listen,* I said. You also swore an oath to uphold the Constitution when you were commissioned, didn't you? Swore to protect and defend our country against all enemies, both foreign and domestic? *Domestic,* Lew."

Craft eased back into his chair. "What are you getting at?"

"I mean that some of our fellow Americans are engaged in a conspiracy of such scope, such far-reaching implications that . . . I didn't come all the way up here just to pay a social call." Archer's manner was very sincere. "There are five of us—you'll make the sixth. Some of them you know: Cummings was at South Base, and Posie Thomas was at the Academy, class ahead of yours. There's a colonel named Michaels up in Alaska, and another major named Oliphant in New Mexico. Posie recruited me, just as I'm trying to—"

"Get on with it!"

"Take it easy, Lew. I can tell you everything that's happened since you reported in at Sacto-Reno. You were met by Mr. Volpone himself, who 'just happened' to be on an inspection tour of ITTS facilities. He showed you the you-know-what, and spun a lot of words about the threat of Communist aggression, about saving 'a few' Americans when the balloon goes up. I'm not guessing; it happened to me and the others when we—"

"Thin ice, Red." Craft's eyes were veiled. "You're still fishing, and I still don't like it."

"You needn't admit a thing, Cobber. But, haven't you twigged yet? A Cabinet official tells you of *one,* er, installation. I have sure knowledge of five—six, if you'll own up."

"Six like the one . . . what I meant was—"

"*Exactly* like the one you're working on," said Archer, capitalizing on Craft's slip. "What's more, we've had hints of a number of others scattered hither and yon. And the American taxpayer has not the slightest inkling of what's going on. Do you have any notion how many Army engineers DoT has swiped? More than *thirty.*"

"You're inferring *thirty* . . . installations? Ridiculous!"

"Is it?" Archer put back the dregs in his glass neatly. He reached for the bottle once more. "I honestly don't know, Lew."

"If you're thinking of telling me to keep my eyes and ears open underground," said Craft in an even voice, "I'm going to break this bottle over your flaming red head!"

"Go ahead," encouraged Archer with a sickly grin. "But let me kill it first; no sense wasting it."

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Craft groaned. "Use your head! The US is building one . . . *some* installations designed to save a slice of its population. Secrecy strikes me as being reasonable, proper, and necessary. Think of the panic there'd be if the installations, however many, became public knowledge. Not to mention their effect on the Sino-Sov warlords. Hell, that might precipitate nuclear war.

"My sincere advice," pursued Craft, "would be to quit blabbermouthing and get on with the job. You and the others can't get together and plot an exposé, if that's what you have in mind."

"Exposé?" Archer flushed. "I came to you because I trusted you, Lew. Always have. We've no goddam intention of exposing anything. If it had only been a matter of the redoubts, I wouldn't have bothered you. You see, there's more."

"Not sure I want to hear any more, Red."

Archer sighed. His sense of urgency seemed to evaporate. "Maybe you're right, Cobber. It's dangerous to know too much, I'll grant you. And if you're scared . . ."

"That won't work, either," said Lew Craft.

Archer slowly pushed back his chair. "Sorry if I was out of line. Guess I'd better take off. You can reach me at my apartment in Denver on weekends. If you change your mind, call me." He scribbled hurriedly on a napkin. "There's the address and phone number."

"Thanks," said Craft. "I won't change my mind."

Archer looked glum. "If I were a betting man, I'd bet you will."

"Don't bet more than you can afford to lose."

"We'll see," said Archer. "Shake my hand, Lew, and I'll be on my way. No hard feelings, eh?"

"Only with girls," said Craft. "Bye." He watched the tall officer wend his way out of the rathskeller with no expression whatsoever, then finished his brandy quickly.

"Carry on, Major Archer," he muttered under his breath.

VIII
February, 1988

The argument went on for almost an hour before Alessandro Volpone lost his famous temper. When that happened, everyone in and around the Department of Transportation walked on eggs. Many lifted eyebrows and eyes-raised-to-heaven shrugs occurred in the corridors and hallways surrounding the office of Secretary Jergenson when Volpone stormed out, looking like a vengeful thundercloud.

He had himself whisked to the airport by limousine. It was Friday afternoon; he was far too agitated to share the ITTS tubes with commuters.

His personal jet put him down at

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La Guardia; a VI helicopter felt its way through the light drizzle and deposited him on a concrete landing pad in the meadow adjacent to his estate. He jumped down and vaulted the guard fence, scuffing his knee painfully, then hurried toward the mansion, cursing in a petulant monotone.

When the door opened, he snapped, "Thank you, Andrews," ripping off his jacket and tie, flinging them in the general direction of the butler, who fielded them adroitly. "Were there any calls?"

"None, sir. Mr. Colo and Mr. Vico are waiting for you in the study."

"Good, good." Volpone charged down the hall like an angry water buffalo. He flung open the double doors to find Vito Vico reading the afternoon paper, while Colo dozed before the fire. "Leonard, Vito," he grunted, going directly to the wet bar.

Reviving, Colo yawned and joined the Mafia Don in watching Volpone pour a stiff dollop of Scotch. Downing it in three gulps, he turned to face them. "Jergenson!" he spat, making the name sound like a curse. "He is impossible. He finally condescended to see me at three, after letting me cool my heels for a proper interval like some junior lobbyist. When I brought up the Federal auto license measure, he threw a childish tantrum, saying I'd better not mention the subject again or he'd vomit. Damned Scandinavian stubbornness!"

"Why is this license thing so important to you?" asked Vico.

"It's the largest untapped source of money on the horizon," said Volpone. "It's essential; without proceeds from Federal auto licensing, all your generosity will be wasted, Vito. The auto license measure was designed to squeeze lower-income-group motorists off the roads and freeways and into the ITTS tubes. Those who choose to drive will pay, and pay dearly, for the privilege, adding a steady, dependable source of funds to DoT's coffers.

"There's absolutely no doubt in my mind," added Volpone, "that we could force the bill through Congress. Senator Stillworth has informally polled both Houses. He thinks we have a better than even chance of passage. But without Jergenson's endorsement, hoping to get the bill before Congress this session is purely academic."

"You must wait him out, Alessandro," advised the Don. "He may yet come around to your way of thinking."

Volpone took to pacing the room. "Not after today's argument, I'm afraid. He'll never sponsor the bill, Vito. I made a serious error in losing my temper with him today, something I'd promised myself would never happen again."

"Don't blame yourself," con-

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soled Vico. "These situations have a way of sorting themselves out, given time."

"Ah, there's the rub—time. We've little time before lack of funding forces things to grind to a halt. Once stopped, they may never start again. We've completely exhausted our excuses for hiding costs of that magnitude."

"But," the Don protested, "there's the money we contributed."

"It provided only interim funding," pointed out Volpone. "We must live through the period from now until Federal auto licensing revenues begin to be felt, plus cash flow from other sources."

Vito Vico frowned. "That wasn't made clear when we had our discussion last month," he said slowly. "Was it?"

"If you'll remember," said Volpone, choosing his words with care, "we talked about it at length."

"Ah, yes. No matter, Alessandro. How much time are we talking about?"

Volpone glanced at Colo. "Six or seven months until compressor production stops. Maybe a bit longer for the pressure vessels, wouldn't you say, Leonard?"

"It sounds like a fair off-the-cuff estimate," agreed Colo.

Vico nodded sagely. "A tremendous sum, but . . . it will sort itself out," he said confidently.

Volpone sighed. "I hope so, Vito. Would you excuse me now? Stay, and we'll all have dinner together after I wash up."

Waving him away casually, the Don slowly inserted a cigarette into his ivory holder, chewing the bit for several moments before lighting it. "Alessandro looks very tired," he remarked.

"I know. I'm worried about him," said Colo. "How he manages to function with the load that's piled on his shoulders amazes me."

"They are very broad shoulders," said Vico. "What can you tell me about this Jergenson? What sort of man would you say he was?"

"I've never met him personally," Colo ruminated. "Alex speaks of him as a hardheaded executive who spent his career years in the automotive industry. He supposedly helped President Blair years ago during his campaign for governorship of Pennsylvania. Jergenson's appointment came, probably, in payment of a political debt."

"I see. This is an election year," speculated Vico. "Would you guess that Blair will retain Jergenson if re-elected?"

Colo seemed unsure. "The conservatives, radical right, radical left, and senior citizens are up in arms," he said. "Blair's opposition would seem overwhelming at the moment. But if the popular vote is again split among many factions, as in '84, he may squeeze by. His chances are no better than so-so, I'd say."

"No matter." Vico waved his

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cigarette holder airily. "The new administration wouldn't take office for almost a full year. If what Alessandro was telling us is true, that would come much too late to be of any value. How old is Jergenson?"

"Somewhere in his late sixties, I'd judge."

Vico's smile was cold. "A member of the hated minority—a 'senior citizen'—even as you or I, eh, Leonard?"

Colo looked distraught. "Alex describes him as a bull of a man. He jogs and keeps fit. He'll probably live forever."

"He lives hard, and will die hard, is that it?" Vico coughed. "It does not necessarily follow."

Leonard Colo blanched, sitting far forward in his chair. "Vito, I believe I know what you are thinking," he said worriedly.

Vico coughed again. "Do you? Leonard, I'm a practical man," he said, "who knows how to protect an investment."

"But . . ." Colo paled. "A Cabinet member?"

"A roadblock, an outsider," corrected the Mafia Don.

"It might be . . . terribly unwise," objected Colo.

"Perhaps." Vico inspected the dapper accountant analytically. "As a personal favor, I would appreciate your not mentioning this to Alessandro. He has enough on his mind already."

"I . . ." Colo rose uncertainly. "I'll say nothing to Alex. Nothing at all. But, Vito, is it *necessary?*"

The Don swayed his shoulders. "As necessary as Alessandro says it is. We shall see." He lifted the phone and punched a code, waited a moment or two, then said, "Fiore?"

Vico rattled something in rapid-fire Italian while Leonard Colo stood alongside the fireplace, staring into the flames and waxing his hands endlessly with a look of world-weary patience that did not match the cold misery in his heart.

There were no witnesses. The accident occurred around eleven-ten P.M. It had snowed lightly in downtown Washington during the early evening, and Mrs. Jergenson later told police that her husband had waited until the snowfall abated before walking the family's matched pet Welsh Corgis, Port and Starboard, through their quiet Georgetown residential neighborhood.

Police reports reconstructed the accident—technically a hit-and-run felony: an electric-powered delivery van, which had been reported stolen from a Maryland bakery yard earlier in the day, had leaped the curb and crushed Ole Jergenson and one of his pet Corgis against the brick wall surrounding a private residence on Dumbarton Avenue. The Secretary of Transportation was rushed to Georgetown University Hospital, where he was pronounced dead on

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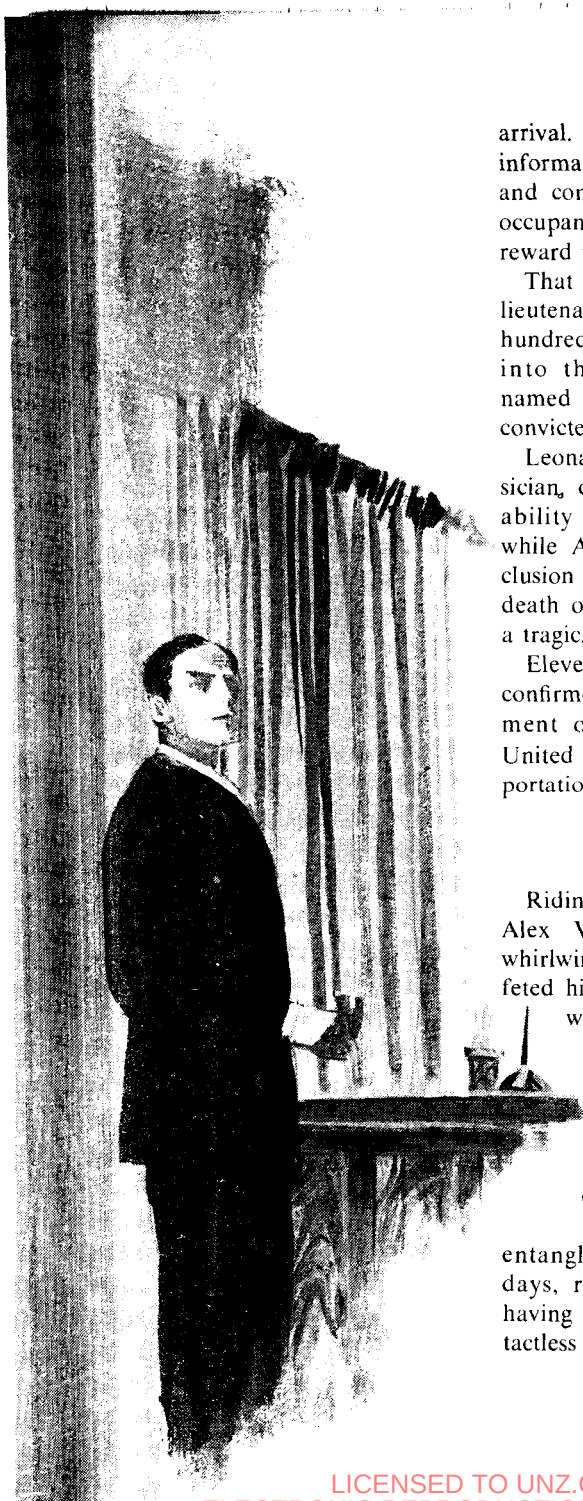

arrival. A reward was posted for information leading to the arrest and conviction of the occupant or occupants of the delivery van. The reward money was never claimed.

That evening, one of Vito Vico's lieutenants caused fifty unmarked hundred-dollar bills to be passed into the hands of a "soldier" named Tomaso Phalangi, a thrice-convicted felon.

Leonard Colo consulted his physician, complaining of his total inability to get to sleep at night, while Alex Volpone went into seclusion at Foxhaven, declaring the death of Secretary Jergenson to be a tragic, irreparable loss.

Eleven days later the Congress confirmed President Blair's appointment of Alessandro Volpone as United States Secretary of Transportation.

IX

March, 1988

Riding down to the sanctuary, Alex Volpone reflected on the whirlwind events which had buffeted his life since his last meeting with Patt, Stillworth, and the others. Jergenson's death had left him shocked and not a little disgusted with Vito Vico for having had the effrontery to order such an "accident." He had stewed about his entanglement with the Don for days, regretting the necessity of having to do business with such tactless animals.

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Ole Jergenson's death had been a damned shame! Any number of people needed killing much more than Jergenson. He was once again filled with an aching, uncharacteristic remorse. Volpone thought of himself as a forward-looking individual; recrimination was unnatural for him. He decided to avoid contact with Vico whenever possible in the future. Nonsense! The whole thing had been his own fault, really. It wasn't fair to blame Vico, though blame him he did.

His Cabinet appointment had also come as a surprise. Volpone had met President Blair only twice during his months as Jergenson's assistant. Obviously someone had plumped for him—someone high up.

The elevator slowed its plunge. Volpone emerged into the subterranean passage leading to the sanctuary, pausing for an instant to compose himself before opening the portal.

All four men were awaiting him, Patt looking taciturn, reserved, Emmerson busy at his self-appointed chore—making coffee. Stillworth and Abrams connived quietly across the conference table.

"Well, lookee heah, if it ain't ol' Alex . . ." Senator Stillworth put one hand to his mouth in mock horror. " 'Scuse me. I meant *Mistah* Secretary of Transportation Volpone."

"Please accept my sincere congratulations, Alex," said General Patt, ignoring Stillworth. "They picked the right man."

"Let me add mine." Rolfe Emmerson set a cup of black coffee at Volpone's elbow. "We'll expect great things from you, Alex."

Volpone thanked the CIA Director and Patt, as well as Abrams when he muttered, " 'Gratulations, Alex."

"And last but not least by no means, mine." Stillworth's drawl was edged in sarcasm. "Always like t'see a good man move up, I do. Proves there's room at the top for someone who's diligent, 'specially when he's man enough to *make* room."

Volpone breathed deeply, a crimson haze before his eyes. Flushed and dull of eye, Stillworth had obviously exceeded his normal quota of Bourbon this evening. "Your manners were poured from a bottle," Volpone said slowly. "I'll take no offense."

Stillworth chuckled. "That's right gracious of you," he said. "All I know is you got some 'friends' I wouldn't care t'make enemies of. Not by a damn-sight!"

"As have you, Senator," said Volpone in a ruffled tone.

"Stop bickering and let's get down to business," urged General Patt. "I have to return to the Pentagon tonight."

"One moment, please," requested Volpone. "You gentlemen are all thinking the same thing, even if most of you are polite enough not

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to mention it. Let's air the matter and have done with it." He regarded the senator sternly. "Ray has made a veiled allegation that I was responsible for Secretary Jergenson's death. It pains me to say that it's true, though not precisely in the manner he imagines. I am innocent of complicity in the murder."

"Murder?" Abrams looked startled.

"If the term offends you, Nat, I apologize," said Volpone, past the use of euphemisms. "I'd gone to see Jergenson over the Federal auto license matter. His stubbornness infuriated me; we had a violent argument, and when I told my . . . friends . . ." He paused. "It was a sin of omission, rather than commission, though that does nothing to excuse it."

Stillworth's grunt was caustic. "Be that as it may," he said, "y'cain't sleep with pigs an' not expect to whiff of the sty."

Volpone swelled visibly. "Your philosophy is comforting," he said, steel in his deep voice.

"Hell, I warned you what'd come of dealin' with hoods!" barked Stillworth. "You wouldn't listen. We've put our collective ass in jeopardy, an' there's no easy way out."

The others watched, silent and apprehensive. "*My* friends have contributed to our cause," said Volpone savagely, which is more than one can say for *yours*, Senator!"

Stillworth looked suddenly wary. "The best defense is a good offense, huh? You could run for Congress with those tactics."

"Senator," demanded Volpone, "exactly how many dollars have the American Rangers contributed to our project? How much hard cash?"

"You're doin' some real fancy speculatin'," mused Stillworth.

"Senator, Senator," retorted Volpone, "no speculation is involved. Last September you sponsored a convocation of Ranger hierarchy in the Tennessee hills. You addressed the meeting twice, promulgating revolution against our country's 'sorry lack of leadership'. You are, and have been for many years, nominal head of the American Rangers."

"Ridiculous!" said Abrams, looking frightened.

"Is it?" Volpone swung on the TV boss. "You, Mr. Abrams, edit and publish a scurrilous rag called the *Tin Star*. I think it's time the pot quit calling the kettle black."

"Even if what y'say were true," scoffed Stillworth, "I defy you to compare 'em with those murderous scum *you* run with."

Volpone leaned across the table, hands flat-pressed and bloodless, his rage Olympian. "Sleep with pigs, and smell of the pigsty, Senator! I've listened to enough holier-than-thou nonsense from you! When it comes to 'murderous

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friends', may I remind you that last December a pipe bomb exploded at a political rally in Jacksonville, killing seventeen Americans, and maiming—"

"Communists," corrected Stillworth vehemently, "*not* Americans!"

"Senator," said Volpone, "if we're having an airing, let's air it *all*. The Sino-Sov Coalition's leaders dearly love you, your endeavors, and everything you stand for."

"That's a goddam lie!"

"It's the truth. Your Red-baiting, reactionary Rangers form one more major movement engaged in fractionating and polarizing our society. We have numerous radical right and radical left causes, several Black militant organizations, that evangelist, Eddy Gerhardt and others like him, spreading the Gospel in the name of a hoped-for religious dictatorship, student rebels who can't decide exactly what they want, but want it *now*, and a hated minority made up of older people who have committed the unspeakable crime of living too long.

"That doesn't satisfy you," went on Volpone, thoroughly incensed. "Now you are operating to disrupt our own tightly knit group. Look at us, Ray! Do you see any starry-eyed idealists? We can't afford to let your overwhelming ego, your dictatorial ambitions, confuse and subvert our purpose."

Stillworth's anger had wilted under Volpone's ferocious counter-attack. "If you expect me t'knuckle under to your paranoid accusations, you got another think comin'," he said in disgust. Ever the consummate actor, Stillworth chose to play the role of injured party, standing head-high above such petty charges.

Rolfe Emmerson waited for a minute as if to make sure the pyrotechnics were over, then took some notes from his jacket pocket and cleared his throat. "I called the meeting because I wanted to discuss something very unusual," he said. "Our people inside the USSR have reported a series of alarming incidents. During the past months, large numbers of Soviet citizens have disappeared."

"Disappeared?" Abrams blinked. "Killed?"

"We don't know. No major figures were among them, merely second and third line directors, government officials, and so on."

"That doesn't sound like a purge," surmised General Patt.

Emmerson touched the tips of his fingers together lightly. "Purges, as such, were more or less abandoned as Soviet policy shortly after Stalin's death."

"How long have you known about it?" asked Volpone.

"A matter of four or five weeks. Our team in Novosibirsk reported that the physicist they'd had on the verge of defecting—the task leader of the Soviet laser weapons

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research program—mysteriously dropped from sight overnight. Assuming our operation had been penetrated, we pulled the team out immediately. Then Alexei Komarov, third-ranked official in the Soviet space program, vanished days before the launching of their new hundred-ton satellite station from Kasputin Yar."

"In China, too," asked Stillworth, "or just Rooshia?"

"Only in the Soviet Union, so far as we know," said Emmerson. "What started slowly has gradually but inexorably snowballed into a rash of disappearances: isolated dignitaries, scientists, writers, educators, artists, composers—even dancers."

"Have you, er, discovered the reason yet?" asked Abrams.

"No." Emmerson was blunt. "Our usual sources of information seem as ignorant as we are."

"Y'say no big wheels are missin'?" asked Stillworth.

"None." Emmerson paused to reflect on his notes. "All members of the Presidium, the visible government, and military, seem to be living normal, public lives. Here's another fact which may be important: few, if any, medical researchers or physicians have dropped from sight to date."

"That's puzzling," said Volpone. "I hate to sound alarms, but mightn't it be wise to staff the redoubts with some of our own?"

Emmerson nodded, saying, "It's dangerous to leap to conclusions, of course, but the most obvious inference is that the USSR has penetrated our Lifeboat Project, and countered the gambit with similar installations. Should that be the case, why staff them now? Are they readying a preemptive strike, or merely being cautious?"

A chill breeze seemed to have whispered through the sanctuary. General Patt closed his eyes, gently waxing the tips of his index fingers. "Other than the usual war games postulates, I know of no specific threat at the moment," he said. "The Soviet Union and China appear to be playing out the strategic arms limitation charade while developing new classified weapons systems, just as we are. Nor have untoward military buildups been reported in either China or Russia."

"What's this medical holdout got to do with it?" demanded Senator Stillworth. "I don't get that at all."

"We've no idea—perhaps nothing," said Emmerson. "We have constructed a mathematical model of the situation in Foggy Bottom. Disappearees have been coded by regional area, date and time of day when last seen, age, occupation, and Communist Party affiliation. After collecting more data, we'll plug in one set of surmises after another and look for projections."

"Surmises, huh?" Stillworth's lip curled. "Seems t'me somethin'

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ought to be done right this minute."

"What would you suggest, Ray?" asked Emmerson quietly.

"Well . . ." Stillworth subsided with a bleary-eyed, vacant expression. "Blessed if I know, to tell the truth," he said.

"Let's keep a close watch on it for now," said General Patt. "You were perfectly correct in alerting everyone, Rolfe, but I think this can be pursued effectively through normal channels topside. Have the President and National Security Council been advised?"

"Not fully. We've had a paper prepared, but I wanted to discuss it here before making the presentation."

"Then we're probably on top of the matter." The general rose tiredly. "If there's no further business, I want to leave first." Eyeing Volpone and Stillworth speculatively as he turned toward the door, Patt departed with a curt nod. The sanctuary was largely silent for five minutes until Nat Abrams left.

Stillworth got up after observing the appropriate interval between departures. Volpone placed a restraining hand on his arm. "Stay a minute, Ray," he requested. "Please."

The senator's pudgy face wrinkled in disdain. The aftereffects of their earlier argument still smoldered in his eyes.

Emmerson took his cue, pausing to don a topcoat and unplug the coffeemaker. "Good night," he said.

"Good night, Rolfe." Volpone lighted a cigarette, rising to dribble the dregs from the coffeemaker into his cup. "We must patch up our differences," he said, solemn-voiced. "There's no other way."

The senator's jowls quivered with mirthless laughter. "So you managed t'get the goods on ol' Ray Stillworth, didja, Alex?"

Volpone lifted his hands in a silent appeal. "All of them know—have known for years," he said. "Neither I, nor any of the others, care one whit about your personal ambitions, your politicking."

"I reckon you're right, at that," said Stillworth. "Why should they? Not when we got a tiger by the tail, sure 'nuff."

Volpone sipped his coffee. "If the blow-off *is* coming, it's an occasion for rejoicing, for being thankful we're prepared, not a time to be frightened into squabbling among ourselves."

"Uh-huh; that's logical. That's a valid statement, Alex, but there're some matters you an' I will never see eye-to-eye on."

"You've been in the Senate over twenty-five years," said Volpone. "How many compromises have you made in those years?"

Stillworth's grin was uneasy. "More'n a few," he admitted.

"General Patt thinks Emmerson's

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an egghead, an intellectual bumbler," Volpone pointed out. "And he has absolutely no use for Abrams. But Patt would die before letting his feelings show here at the conference table. He's simply too much of a professional, too much of a man, not to sublimate his ego in the interests of getting the job done. I'm asking—pleading if necessary—for your cooperation. It's our only salvation if things are coming to a head."

Stillworth nodded in concurrence, but his eyes were hooded. "No more feudin', Alex," he said, "an' that's a solemn promise."

Volpone came slowly to his feet. "I'll respect you for it, Ray." He threw his topcoat wearily over one shoulder. "You'll remember to set the destruct mechanism and turn off the lights?"

"Sure thing. G'night, Alex."

Volpone keyed the door, uncomfortably aware of the calculating, bloodshot eyes that bored twin holes in his back as the sanctuary's steel-clad portal clanged shut behind him.

If Alessandro Volpone had gone to the meeting feeling remorseful, he came away in superlatively downcast spirits. It was after midnight of a wet, filthy night when Bartlett picked him up in the limousine at the mall entrance to Washington's ITTS station. The rain was cold, needle-sharp, threatening to turn to sleet at any instant. The weather matched Volpone's mood exactly.

Not at all sleepy, though bone-tired, he toyed with the idea of having Bartlett drop him off at Marissa's apartment. No, he didn't really want to sleep with Marissa tonight. What he really wanted—needed—was an hour's chat with Leonard Colo. But Leonard was home in New York, minding the store in his absence. Wait, hadn't Leonard mentioned a recent difficulty in sleeping? Volpone glanced at his watch.

He lifted the speaker. "Bartlett, let's drive around for a while. Down by the river would be nice." He opened the compartment behind the front seat and lifted out the phone, tapping the code of Colo's Manhattan suite. The phone rang three times.

"Yeah?" said an unfamiliar voice. "That you, Lieutenant?"

"Pardon me. I must have punched the wrong code."

"Uh, maybe not, buddy. Just a sec."

There was a short pause. "An old gent named Colo lives here. You a relative?"

"I . . . no," said Volpone. "Where is Mr. Colo? Who are you?"

"Take it easy, friend. They took him to Bellevue a while ago; a seizure of some kind—a stroke, I think. There's no police business here; we just followed up the ambulance call. Hello?"

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Hands trembling, Volpone let the phone dangle. "Leonard!"

He slammed the phone back into the compartment, his mind racing. By air would be quickest—maybe. That would mean rousing the pilots, who might be God-knew-where, and waiting for them at the airport. "Back to the ITTS station, Bartlett. Hurry!"

Washington, Baltimore, Philadelphia, Trenton, Manhattan—he made it in less than forty-five minutes, flagging a taxi outside the Midtown Station. The electric cab trundled across town to First Street, taking its time on the city's icy streets. Volpone threw a bill of one denomination or another at the startled driver, then bolted up the steps of gloomy old Bellevue Hospital.

Several clusters of discouraged-looking people were waiting in the lobby. Anxious to find Leonard without delay, Volpone decided to use some clout—something he did rarely. "You!" He accosted a passing male nurse. "Take me to the night administrator."

The man, a Puerto Rican, kept walking. "Sorry, sir; I—"

"Here!" Volpone tugged out his wallet. "I am United States Secretary of Transportation. Hurry; it's damned important!"

The nurse ushered him to the night administrator, who called the chief of emergency. In a very few minutes Volpone was shown into a hushed room on the third floor. A laconic doctor introduced himself.

Volpone didn't hear him. He was staring at the wasted figure under the oxygen tent, listening to the wheezing rattle of his labored breathing. "Will he live?" he asked simply.

"We can only wait and see," said the doctor matter-of-factly. "You see, his age . . . Are you, uh, related?"

"No," said Volpone. "Isn't there something else you can do for him? If it's a question of money, I want nothing spared."

"Nothing," assured the doctor.

He sat in the corridor, smoking through the wee hours. They left him alone because he looked like he wanted to be left alone. At daybreak, a nurse brought him a cup of coffee which he took, unheeding, and set to one side after touching it to his lips.

When the first, wan winter sunlight struck the filmed window at the end of the corridor, the administrator and the doctor came to tell him that Leonard Colo was dead.

Volpone's grief was boundless.

X

March, 1988

Craft was dozing on the sofa in Betty's Westwood Village pad when the shattering announcement came. The tri-di program was interrupted by a gray-faced announcer with panic in his eyes.

"Take shelter!" the man cried.

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"This is *not* a practice alert!"

Lew Craft sprang to his feet as the announcer went on frantically. "Unidentified submarines are reported off both coasts. The US is under attack. Take shelter!"

"God, what'll we do?" Betty put one hand to her throat.

Dry-mouthed, Craft hung on the announcer's words. They were to switch to an emergency radio frequency for further instructions; UTVN and all other TV stations were leaving the air. "Good-bye," cried the announcer. "God bless you, and good luck!"

The tri-di tube erupted a hiss of static as the hologram dissolved into meaningless, random flickers of light.

"Dammit, I should have listened to Red!" Craft swore in a grim monotone. "The redoubt's too far away."

"Lew, we've got to *do* something," shrieked Betty.

Craft was kicking himself for being pigheaded. Archer had gone to considerable bother, looking him up that weekend at Squaw Valley. Why hadn't he *listened?* Five redoubts—six, counting Sacto-Reno! They'd have had a chance if only he'd listened. For all he knew, there was a redoubt between Los Angeles and San Diego. "Grab a coat," he instructed. "We'll try the ITTS tubes. There'll be a stampede, but it's our best shot. Move!"

Stifling a sob, Betty scampered into the bedroom. Craft jumped to the window and slid it open. A tremolo, low-pitched wail rose from the general direction of UCLA's campus, intermixed with the rapid ululation of police sirens and the faint, chilling shrieks of terror-stricken thousands who ran in all directions below him.

He had turned from the window, chiding himself for having driven Archer away without a full hearing, when a blinding light brighter than the noonday sun flooded the apartment—

Craft awoke half out of his bunk, enmeshed in a twisted jumble of bedding. The marine corporal who had just switched on the light stared at him curiously. "Feelin' OK, Major?"

"Yeah. I'm . . . fine. Thanks for rousting me, Courtney."

The nightmare stayed with Craft while he showered and dressed, vivid, authentic, and terrifying. Lew Craft seldom dreamed. He'd stewed about Red's visit for weeks. This was the first indication that Archer's warning was nagging at his subconscious as well. Why had he sloughed off his well-meaning friend?

Cursing his own doubting nature, Craft left his cubicle on H Level, riding down the construction elevator past J, K, and L Levels, where legions of workmen labored to finish the sprawling living quarters, to M Level's deserted concourse. His cramped office looked exactly as

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he'd left it—rolled A&E drawings of the redoubt scattered over both his desk and drafting board. He picked up his slide rule, stuffed it into its plastic holster and put it away in a drawer, then went about tidying up until both the desk and drafting board tops reappeared.

Yesterday he had gone over the redoubt blueprints inch by inch, comparing them with the general specifications for survival and housing that Art Parkinson, VI's taciturn superintendent and security coordinator, had reluctantly allowed to pass into his hands after numerous petitions. Gaining Parky's confidence had been no easy chore. Craft had tried flattery, had tried buying Parkinson a beer after hours in the B Level canteen. The super had seemed willing to guzzle Craft's beer indefinitely, had absorbed his flattery like a deadpan sponge, and had listened to his persuasive techniques with a deaf ear—until the evening Craft idly mentioned that what the redoubt lacked was a handball court.

Parkinson had perked up. "Handball, eh? Play, do you? There're some courts on M Level; you just haven't found 'em."

At handball, Parky was a demon in the guise of a quiet-spoken, middle-aged man—quick, resilient as the hard rubber ball itself, and possessed of a fierce competitive drive. After their fourth or fifth epic battle, Craft had casually mentioned his gridiron days at West Point. "Handball's a good conditioner, but I never played enough to really get good at it."

"Craft? Hell's tinkling bells! You're not the same Craft who played middle linebacker for Army around '78 or '79?"

Craft had admitted modestly that he was.

"I'm a sonofabitch!"

That had broken the ice. Parkinson had paid for the beer that evening; he'd seen the Navy game in '79 and replayed it with absolute and total recall, complimenting Craft's part in Army's game-saving goal line stand with less than a minute to play.

Parky had issued him a temporary electromagnetically-keyed pass to the inner microfile, but only after Craft pleaded the necessity of becoming familiar with the entire redoubt complex if he were to do his job properly. But the inner "black" file, guarded round-the-clock by armed marines, probably contained the information he wanted.

Then, two weeks after talking to Archer at Squaw Valley, the heat exchanger had failed suddenly on a huge, vane-axial compressor in the redoubt's M Level air storage complex, causing the high-speed bearings to overheat too quickly for the malfunction-detector alarm system to react and shut down the machine. By the time a watching technician hit the panic button, the great compressor had turned itself

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into a smoking mass of ruined windings and insulation. Craft had ordered another compressor shipped from the VI depot in Sacramento, logging the burned-out unit's serial number as it was sent to the salvage yard.

He'd forgotten it until the new unit arrived, coming up short as he was logging the new compressor's serial number. A separation of almost thirty-five thousand significant digits yawned between the old and new serial decals. Either there'd been a model change, requiring new serialization, or almost *thirty-six thousand* model RR-17-21C vane-axial compressors had been produced since the ruined unit came off VI's assembly line.

Which was absurd! Whistling raucously through his teeth, he swung about to the drafting board and unrolled a thick sheaf of prints labeled, "Redoubt Complex MB California–General Plan."

A half-mile below the surface, the hundred-foot torus of the air intake plenum surrounded Michigan Bluff's elevator shaft, a twenty-foot-diameter vertical bore six thousand feet deep. Large feeder lines dove downward from one hundred and fifty booster impellers ringing the hemispherical walls of the primary intake pit which, from aircraft in flight, resembled a plowed, fenced field enclosing a ramshackle house and barn–roughly a six-hundred-foot square. Inrushing air passed through a thick structural mesh of steel and fiberglass that did double duty as both camouflage and gross air filter. The "farm" would not stand close inspection, being intended to deceive only aerial and orbital surveillance.

Craft traced down through the redoubt's dozen levels with his index finger. His first concern–aside from multiplying everything he discovered by Archer's factor of five–would be to determine steady-state temperature levels of the vane-axial compressor motors. He would investigate with thermocouples to verify the effects of convection, as well as heat exchanger efficiencies, tank cradle heat-exit temperatures, and random ambients throughout the air storage complex.

But that problem came later. Craft pushed the roll of prints to one side, rubbing his cheek with the flat of one hand. Where, in the microfile open to him, could he hope to find a clue toward providing Archer's magic number–five. Six, counting this redoubt. And hadn't Red mentioned something about there being "more" to the conspiracy? He decided to search the master index again. Something *had* to be there. He'd already spent hours winnowing data from the microfile, but what other path was open?

His tiny electric maintenance buggy was beetle-slow; the redoubt's personnel trams and

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slideways would be inoperative for at least another two months if current turn-on schedules were met. He trundled down the branch corridor, through a vaulted arch, and into the main concourse, heading toward the far end of the air storage complex.

Craft would feel ever small and insignificant here. The sheer *scale* of things lent a larger-than-life air of grandeur to the immense hall which never failed to make his pulse rate jump. Smooth, spheroidal pressure vessels of steel and prestressed concrete loomed one hundred forty-five feet in diameter, and over two hundred feet long, cradled in massive welded frames and interconnected by a maze of heavy-walled pressure lines. It was these gargantuan tanks—a single, continuous row of monster eggs, vanishing to a pinpoint under the scored, high-arched ceiling—that rocked the imagination. The air storage complex was just over two miles long.

An overhead traveling crane, supported by derrick-like stanchions straddling the string-straight necklace of tanks, moved thirty-five working compressors from platform to platform for individual container pressurization, enabling each spheroid to be used as a single source of compressed air. The platforms also supported pressure monitors, feeder lines, bleed valves, and a manual override console housed in a sheet metal control booth atop each fifty-foot-high steel stairway.

He arrived impatiently at the alcove fronting the microfilm vaults. Viewers, serving the open files, were scattered throughout the redoubt; the inner file was restricted to use by those individuals who'd been cleared for access. He turned in and encountered the only living persons he had seen in the empty vastness of M Level: a pair of armed marines, lounging outside the small-arms-proof plastic bubble housing the "black" file. Inside, Art Parkinson grinned at Craft slyly.

"Hi, young fella," called the superintendent as Craft parked his cart. "Come in and shut the door."

" 'Lo, Parky." Craft slumped in a chair, propping his feet on the desk. "I'm trying to chase down the reason why that heat exchanger crapped-out last week. Whatever it is, it cost us a whole unit." Craft hooked a thumb nonchalantly toward the solitary viewer behind the desk. "How about the secret file? Could be the data I need is in there."

Parkinson met Craft's eye. "It's off limits," he drawled. "No two ways about that."

Craft sighed. "OK, but what if the info I need *is* stored there? I can't do my job without some answers, can I?"

"Mighty few people on this job know *all* the answers," said Parkinson. "Tell you what; I'll run a recheck on you through DoT and

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government security, and see if we can get you a provisional clearance. Meantime, use the inner file as best you can. No damned reason why your hands should be tied, but I got my orders." Parkinson lifted his hands helplessly.

Craft made a rude noise with his lips. "What's the sense of even having a black file if no one's allowed to use it?"

"Search me. I was told it held some data vital to national defense—stuff the big wheels will need if things ever go pop." Parkinson smiled. "I don't know what's in there, either, or if access'll help you, but it will only take an hour or so to find out."

Parkinson rose. "Let's cut out. I'm going to lock up, now. If you come up with the answer to that heat exchanger problem, I may let you beat me at handball tonight."

Grinning, Craft said, "That'll be the day!" He went to his cart and retrieved a notebook and some drawings. The marines ignored him as he let himself into the inner file. He inserted the key, unlocking the board, and started with, "Compressors—Air Storage," as a general heading, scanning down the list until he came to, "Emergency Redundant Facilities—Parts, Tooling, Jigs, Fixtures." He stepped to one of the viewers hulking in a row along the near wall and punched an alphanumeric code. Unseen, spool CC-96 popped into the viewer; the screen lighted. He moved the joy-stick control to fast wind, watching the fiducial mark as it rose toward the level indicated by the index. The material was voluminous, covering many microfilm frames: horsepower curves, usage factors, drawings of compressor piece parts, fabrication jigs, tools, materials and processes involved in manufacture, ad infinitum.

Craft spent the better part of an hour reviewing design data on the heat exchangers, learning nothing new. At the end of the section he found a two-frame table devoted to logistics spare parts. He read it, then read it again, mildly shocked. In round numbers, there was logistic provision for six hundred and twenty spare parts—enough for *twenty* redoubts.

Lew Craft tilted his chair backward in thought, whistling. Redundancy was one thing, but . . . the vane-axial compressors were identical; interchangeability had been a primary design criterion at VI. It made little sense to store spares in those quantities; air storage would cease instantly in the event of attack, since the outside atmosphere would presumably become contaminated. Why, then? The only explanation, logic said, was that *other* nearby redoubts stored redundant backup hardware for quick relocation and transportation of basic necessities. *Many* others. But, twenty? Then he remembered that Archer had suggested *thirty*.

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He stared fixedly at the logistics table, then rewound the spool and went back to the master index, checking, "Heating, Refrigeration, Office Supplies, Medical Supplies, and Culinary Supplies." The spares' ratios were roughly the same. He came away half-convinced; the new factor would seem to be Archer's "five" times four, which equaled twenty. He tried to imagine twenty vast, subterranean fortresses like the one he was standing in, and his mind balked.

Removing his key from the master index panel caused the file to lock automatically. He waved to the marine guards and returned to his office, having discovered nothing he could point to and say, "There's the proof." Nevertheless, Red's story began to look like it had plenty of meat in it, though it wasn't very plausible.

Craft scowled, deciding he didn't like the role of snoop; it was contrary to his nature. So his government—or *somebody*—was providing havens for . . . For *how many*? He pulled out his slide rule and manipulated it, then whistled softly. Twenty redoubts like Sacto-Reno would house a total of half a *million* persons.

Craft swore, jamming the slide rule back into its holster. Enough goddam butterfly chasing! Frustrated, he got up and prepared to go back to work. The intercom buzzed. "Yeah?"

"This's Parkinson," announced the squawkbox. "I just got my ears burned and my arse chewed, and you're to blame. Government security did a double back flip and came up spitting fire when I asked for your provisional black file clearance. No one but Gawd Almighty and the Archangels can get near that stuff. Sorry."

"Uh, so am I, Parky. I didn't mean to get you in trouble."

"Naw, you didn't," assured Parkinson. "I was joking. I called comp'ny headquarters in New York. After getting shuffled around for a while, they let me talk to Dr. Seymour. He says the heat exchanger dope, and a lot of other specs and proprietary jazz, is locked in the VI secret file right in my very own office."

"Hey, that sounds like paydirt. Give me a chance to take some temperature readings, then we'll dig into your file and—"

"Whoa, son; it ain't that easy," said Parkinson. "Everybody and his brother are hiding secrets on this program. Doc Seymour says it's OK opening that file, providing I stay with you at all times. Now I'm a nursemaid. Ain't that something!"

"Nothing's easy any more," pacified Craft. "When's a good time for you?"

"Oh, maybe tomorrow afternoon . . . Hey, Doc Seymour wants feedback on that heat exchanger problem. He asked me to have you call him and discuss the details when you've got a handle on it."

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"Sure thing; will do. What time's our game tonight?"

"Handball?" asked the super. The intercom remained silent for several seconds. "Tell the truth, I might not be up to it tonight."

"That's OK, Parky. Take care of yourself."

Craft washed up and combed his hair after going off watch late that afternoon. Thoughts of a lonely meal in the commissary made him grimace horribly at himself in the mirror. Without Parkinson to duel at handball, the evening lacked purpose. He might find a poker game up in D Level, or roll a few strikes with Matt in the M Level bowling alley, or play some billiards. It all sounded dull.

As a consulting engineer, Craft had freedom to come and go as he pleased. He changed into a pullover and slacks, grabbed his ski parka, and headed for the elevator.

Michigan Bluff was little more than a wide spot in the narrow mountain road. Craft bummed a ride from the shafthead to town in a delivery truck that was heading back to Sacramento. It was after six o'clock, and dark, when he thanked the driver and swung off.

The single drugstore featured faded advertising displays and a collection of dead flies in the front window. He asked the counterman for change, since the pay phone was an antique and he could not use his credit card to make the call, then got out his wallet and looked up the hastily scrawled number, placing the call with a surly-voiced long distance operator. The phone lacked a video channel. It rang twice, then a woman's voice said, "Hello?"

"I'd like to speak to Major Archer, please. Is he there?"

"I'm sorry. We've just moved into the building." The woman sounded anxious to please. "The phone hasn't been changed yet, but . . . I could let you speak to the apartment house manager. He's here fixing the faucet."

There was a long silence. Craft could hear mumbling away from the phone. "Hi, I'm the manager, Can I help ya?"

"I'm trying to reach Major Archer. He gave me this number."

"Oh, yeah—Archer. Red-headed fella. Didn't see him for a couple of weeks, then two fellas came by one day and collected his things. Paid his rent clear till the first of May, they did."

"He's moved? Uh, did he leave a forwarding address?"

"Didn't leave nothing," said the man, chuckling. "He just quit coming home, is all. Kinda peculiar, ain't it?"

"These men who picked up his belongings, who were they?"

"Damned if I know. They didn't say. Sorry; I'd like to help ya."

"Yeah," remarked Craft sourly, "so am I. Thanks, anyhow."

He hung up, standing before the

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phone for a long moment, imagining his friend talking when he should have been listening–probably in some public place. Red had made a point of mentioning that he was being watched. Had someone seen him make the wrong move?

Craft walked out into the night, thinking as he paced along the sidewalk of Michigan Bluff. He made a bet with himself that none of the officers Red had mentioned were any longer in circulation. He *knew* they weren't, though he couldn't explain why he knew.

But he did!

What else had Red discovered? That more than thirty officers had been transferred to DoT from General Thayer's command. Craft now had superficial knowledge of six redoubts at minimum. A hunch, and the logistics spares' quantities described in the microfile, implied twenty. To cap it off, Red's information hinted at *thirty*. Thirty redoubts would house three-quarters of a million persons. That wasn't just ridiculous, it was obscene!

And Red had said that there was *more* to the affair than just the redoubts. He had no idea–none at all–what Archer had meant; he'd been too damned impatient to find out what kind of "more." But now he fully intended to try.

Stubbornness was a trait with which Lew Craft was richly endowed. He decided to discover, once and for all, what was at the bottom of this crazy business, not for General Thayer, Senator Lewellyn, or Hoo Hanford, but simply for his own satisfaction.

And he would lay the groundwork for saving his own hide, too, when the time came. No one was going to put him in a bottle, as they seemed to have done with Archer. No one!

Craft had a drink in a shabby bar, silently toasting Archer. Red had bet that he'd change his mind. Score one for Red!

Afterward, he walked down the street and ate something anonymous in a greasy-spoon diner that was getting ready to close, then returned to the redoubt early and sat staring at the wall of his room until the wee hours in a very determined frame of mind.

XI
March, 1988

Senator Victor Lewellyn was having breakfast alone when he ran across an interesting story in the *Washington Post:* "A spokesman for Volpone Industries today announced the sale of Alessandro Volpone's fabled yacht *Spindrift* to an unspecified Argentinian shipping concern.

"*Spindrift*, long acknowledged one of the largest, most opulently appointed private pleasure vessels afloat, had been reportedly placed on the block by the billionaire industrialist both because of his age,

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sixty-three, and because his duties as Secretary of Transportation denied him time to make use of the ship."

On page six, Lewellyn found a photo of Alessandro Volpone standing somberly, eyes closed, head bowed, at the graveside services for Leonard Colo, his business manager and lifelong friend.

He thought about Volpone as he polished off a second English muffin and finished his coffee, then went to his study and seated himself at his desk. He punched a phone code, idly tapping a pencil while waiting for an image to form in the phone's small video tube.

"Good morning, Mr. Han—" Betty Dancer's image brightened with a sunny smile. "Well, hi! How's my favorite senator?"

"Tol'able, Betty. Is our 'favorite publisher' his smiling self?"

Betty wrinkled her nose. "More or less; he just got in. He's arguing with someone on another line. Can you hold?"

"Sure, if he won't be tied up too long. By the way, Betty; had any luck persuading your boyfriend to help us with, uh, that matter?"

"Not much." Betty Dancer sobered. "Lew's a stubborn fella when he wants to be. He insists ITTS is a civilian job, that you or anybody can find out all about the project simply by asking DoT."

"He does, does he." Lewellyn was bemused. "Uh, Lew's wrong, Honey Chile," he said dryly. "It's not that easy, believe me. Will you keep after him?"

"Well . . . sure." Betty's manner informed the senator that she was less than eager to do so. "I'll turn into a regular old nag, if you insist. But I can't promise anything."

Lewellyn smiled. "I accept your offer humbly."

"Oh, he sometimes talks about the job in generalities," she said, "when he's prodded. Lew's his own man; it's hard to explain how darned independent-minded he is. God, I could tell tales!"

The senator nodded. "Say, is Hoo still on the phone?"

"He's just finishing," she said. "Here he is."

"Hello, old-timer," greeted Lewellyn as Hanford's angular visage took Betty's place in the tube. "Listen, the morning paper tells me Volpone's upped and sold his cherished yacht."

"I know," said Hanford. "The story come over the wire yesterday afternoon. It puzzled our staffers: they showed it to me."

"Kind of odd, isn't it?" asked Lewellyn slowly. "I read the manuscript of your article on my last trip west, remember? According to it, Old Moneybags would have parted with his mistress, or an arm and leg, before parting with his yacht."

Hanford sucked his dry pipe thoughtfully. "The story mentioned his age, his total involvement in DoT and the—"

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"You didn't *buy* that explanation?"

"Didn't I?" Hanford's brows arched. "Why not?"

"Because it makes nonsense," remonstrated Lewellyn. "So he's sixty-three! Think about it, Hoo; that's the time of life when a gentleman of Volpone's stature would *need* a yacht."

"Wel-l-l," granted Hanford, "that makes considerable sense."

"Sure does. And Cabinet appointments are temporary," pressed the senator, "lasting until the next administration takes office. In this case, next January, if the polls are telling the truth."

"Hm-m-m, what other motives could he have, Vic?"

Lewellyn's grin was sly. "Maybe he needs the money."

Hoo Hanford chuckled around his pipe. "That *must* be it." He snapped his fingers. "Like I need appendicitis!"

"Let's not laugh it off too quickly, churlish publisher. I had a hot flash when I read that piece in the paper, and I've learned to trust my hunches—some of 'em, anyway. Is there a way you could do a quick, quiet check on Volpone?"

"A *what?*" Hanford shook his head in wonder. "Take a week in Bermuda first chance you get, Vic; you need a rest. Investigate the *credit rating* of someone worth three-plus billions? It's easy: he has none—none at all. You can find out how GM's doing, or Bethlehem Steel; they're public enterprises. You can check out Volpone Industries, too. But not old Alessandro himself, for Crissakes!"

"*You filthy rich bastards are all* the same," groused Lewellyn.

"Heh, heh; very funny. The wolf's not at my door, Vic, but Volpone could buy and sell people like me with petty cash."

"I . . . uh, see what you mean." Lewellyn was chagrined. "Isn't there *some* way to discover a mogul's financial status?"

Hanford shrugged. "Yes, if you're willing to spend that kind of money for mere information, but no sane, practical way I know of. The Supreme Court has made some astonishing decisions recently about respecting the right of privacy."

Senator Lewellyn developed a faraway look. "Volpone's picture was also in today's paper," he said, "attending the funeral of one of his employees in Brooklyn. He looked a thousand years old, with the weight of the world resting squarely on his shoulders."

"Ever see any cheerful people at a funeral?" demanded Hanford.

"No, but I . . . OK, I give up. *Maybe I'm so strung out by the* ITTS money boondoggle that I'm reading things into Volpone which simply aren't there. Sorry I bothered you."

"Bother me anytime," said Hanford cheerfully. "Say, weren't you

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planning a trip out to the coast sometime soon?"

"Next month," Lewellyn told him. "Just for the weekend, but Ginny and I will stop by and say hello. Will you be in town?"

"April? Uh, yes; I'll be home all month. See you then."

"Right. So long, old-timer." Senator Lewellyn switched off.

"Not again!" Bent over donning ski boots, Lew Craft raised his head, a dangerous glint in his eyes. "I thought we settled the question of me spying for Lewellyn and your boss last time around."

Betty Dancer finished tying her long blonde hair into a bun, glancing at Craft in the vanity mirror. "My, aren't we touchy! I only asked how the job was going, and got my head bitten off."

"Come off it!" he said, a rasp in his voice. "I won't be used; not by Hoo Hanford, or anyone."

"You've been moody and grouchy all weekend," complained the girl. "This's me, Lew," coaxed Betty in a softer voice. "Something's eating you. Why don't you tell me."

"Drop it," he said, stamping the floor of their room to settle the boots on his feet. "Let's get up the hill; it's after twelve."

"I don't feel much like skiing today," she said petulantly.

"Then I'll go alone," he said.

Betty turned, looking stricken. "I'm sorry," she said. "I didn't mean to start one of our weekend bickers."

He came over to stand beside her. "Our regular Sunday battle," he said in resignation, touching her hair. "Damned if I can explain it; the last thing I ever want is a fight."

"I . . . know." Betty got up and put her arms around his waist, nestling her head on his chest. "Let's stay here and lounge around. We'll get tipsy and make love, then go down and sit by the fire and swap lies with the other ski bums until dinnertime."

Craft smiled lamely. "That's a good notion. But there's something I have to do up on the mountain this afternoon."

The girl made a moue of frustration. "*Must* you always be so damned mysterious about everything? What do you have to do?"

"Stay here and relax, if you want," he said. "I'll be back."

Betty's lips compressed with determination. She reached for her parka. "I won't let you out of my sight today. Not after *that*."

Craft held the door, watching skeptically as she stepped into the hall with dainty grace.

The day was gray and overcast, with no wind—the sort of hushed, expectant weather which presages falling snow. A few random flakes settled around the chair-lift as they were carried upward toward the summit, but it did not begin to snow in earnest until they left the

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chair and poled around the brow of the hill.

The girl pointed. "That particular A-frame building," she lectured, "covers the ITTS emergency escape elevator shaft reaching down to where the tunnels will shortly join up."

"God, you're smart!" Craft whistled in appreciation. "Where did you learn all that good stuff?"

"My boyfriend told me," said Betty smugly.

"Better straighten the clod out," suggested Craft. "You said, 'will' join up, instead of 'have' joined up."

Betty skewed to a stop beside him. "Already, Lew? Tell me true; did the tunnels miss by much when they came together?"

"Miss!" Craft grinned. "There's no margin for error in an ITTS job, luv. The Sacto-Reno bore interface was so smooth that we needed only a thousand-or-so feet of blend casing. Not bad, considering the disparate elevations of Reno and Sacramento, or the distance separating the origination point of each bore."

"Blend casing?" Betty looked puzzled. "More engineeringese?"

"Uh-huh. They enlarge the bores on either side of the interface, then fair in the out-of-line segments with special casing centered around a slow-setting cement liner. The tube ends up with a minute ripple in it, but no one could ever find—or feel—it."

"Fascinating! I suppose they'll put in the elevator next."

"It's installed," informed Craft. "The elevator went in right after breakthrough. A path to the surface is like money from home when you're working miles and miles from daylight."

The girl's eyes widened. "Miles and miles . . . oh-h-h, that sounds so spooky! Have you been in the new section yet?"

"Twice," he said. "I supervised the crew who preassembled and installed the elevator components."

Betty Dancer stuck her ski pole in the snow. "OK, we're here." She brushed away a few snowflakes from her sleeve. "Whatever it was you wanted to do, you'd better do it fast, partner. We're liable to get snowed in."

"*You* may end up snowbound," said Craft, waving toward the A-frame building above them. "I have a way home—snow, or no snow."

Betty pouted demurely. "You're cute! Gallant Major Craft, who abandons damsels on snowy hillsides!"

"Let's climb up to the shelter," suggested Craft.

Seen close up, the structure was larger than it had appeared from below. A galvanized sheet metal roof covered eaves swooping steeply beneath the snowline on both sides of stone steps leading to the entrance. The interior consisted of a single, huge room rimmed

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with a shallow loft on its three visible sides. Craft explained that the shelter was stocked with emergency rations, a fuel-oil-powered furnace, a wireless telephone, flares, snowshoes, and a fuel-oil-powered generator for lighting. The stone floor looked uncomfortable, though Betty promptly admitted that camping on it would be vastly preferable to spending nightmarish hours trapped deep in the bowels of the Sierra. A DoT placard warned that casual use of the shelter by skiers would result in federal prosecution.

It was snowing heavily when Craft decided to schuss around to the north side of the building, poking the snow in a speculative manner. Betty followed, watching with doubt in her eyes as he studied the darkening, swirling sky.

"What are you doing?" she inquired after a moment.

"It should be shady out to about . . . here," he mused.

"Shady?" Betty was exasperated. "What, exactly, are you doing?"

In answer, Craft bent double and popped loose his Saloman bindings. He stepped from the skis, sinking thigh-deep in the powdery drift ten feet from the A-frame shelter's eave, and began to dig a trench in the snow with mittened hands.

"You're insane!" accused Betty, staring in disbelief.

Craft worked steadily. When the trench was deep enough for his liking, he buried the skis and poles, then floundered around the end of the eave to the stone steps, brushing away the ice crystals clinging to his ski pants. "There, that should do it. The skis won't be hard to find; I buried them in line with the roof."

"*Why* did you bury your skis?" Betty was not to be put off.

Craft shrugged. "I may want to do some skiing if it gets stuffy down below. You never know."

"I don't believe that. That's crazy!"

"Do me a favor. Schuss over and shove a little snow into the trench, then come back toward me and cover my tracks. The drifts will wipe everything out soon, but more is better. OK?"

"*Why did you bury your skis?*" shrieked the girl.

"Don't get excited," placated Craft. "I told you."

"Y-you expect me to believe . . . *that?* You," she announced dramatically, "are a nut—N-U-T!"

"Let's get back to the chair-lift," said Craft, unperturbed. "It's beginning to snow fairly hard."

"What the hell do you plan to do, *swim* down?"

Craft smiled. "There's a macadam path somewhere under the snow. If I step off the edge, I'll find out in a hurry. C'mon."

Almost in tears, Betty gave up and followed him, groaning. They rode the chair-lift together, walking through falling snow into the

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warmth of the lodge. They had hot buttered rum and popcorn in front of the huge fireplace that afternoon, while snow fell and the oak-beamed lounge took on a rosy, congenial glow, then ate dinner early and spent their remaining hours locked in each other's arms while purple twilight seeped in through the windows and the snowfall abated and eventually stopped.

Arm in arm, they boarded the bus and rode, silent for the most part, down the wide, gently curving freeway to Sacramento. Craft kissed Betty and held her for an instant at the ITTS station. Then he reluctantly let her go.

"Someday I'll find out why you buried your skis," she called.

"Someday," he agreed.

"You're out of your mind, but I love you anyhow."

Lew Craft was smiling secretly when he left the station.

XII
April, 1988

"I love it!" Marissa pirouetted at the window, enchanted by the view. Their suite in *Hotel Baur au Lac* looked out over the *Zurichsee*, with the clean white silences of the Great Alps hanging along the horizon. "It's so bright and cheerful now," Marissa exclaimed. "Last night, when we landed, Zurich was moody and misty. I wasn't sure I'd like it. But, today . . ."

Volpone watched her, thinking how like a lovely butterfly she was with sunlight streaming through the French windows, illuminating her filmy negligee. He realized sadly how little he now felt for Marissa. Beautiful in a classic, more-than-human way, like perfect porcelain, she dressed fashionably, knew all of the right people, and was very, very competent in bed. But no longer exciting. The nagging worry of growing old rose to haunt him. "Come and dress," he urged. "Weren't we going shopping?"

"Oh, we must," she said. "You rushed me away from Washington with nothing but the clothes on my back."

They windowshopped along Zurich's Fifth Avenue—the *Bahnhofstrasse*—admiring quaint buildings, old signs, medieval lanes, tearooms, and the city's incongruous baby-blue streetcars, a holdover from another era. They spent a half-hour at the *Grossmünster Kirche*, where *Karl der Grosse*—Charlemagne—lies halfway up the south tower, visited his somber crypt briefly, then returned gladly to the lucid sunlight of *Bahnhofstrasse*. The sky was azure; the air crisp. Linden trees were already beginning to cast perfume.

They had lunch in a so-so restaurant near the Urania Bridge, then Marissa began shopping with a vengeance, modeling chic pantsuits and gowns in one salon after another. Glancing at his watch often,

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Volpone finally asked, "Would you mind terribly if I went out for a drink and a stroll, my dear?"

She touched his cheek. "Run along, Alex. I know you're bored."

Leaving the boutique, he hurried along the boulevard toward the bank. It would be his first dealing with the "Gnomes of Zurich" since Leonard Colo's death. Volpone sorely missed Leonard; he had grown accustomed, over the years, to allowing Leonard to run important errands like this one. He had taken Leonard for granted. Now he must do it himself, since there was no one else—no one.

He entered the bank, going directly to the barrier, and let himself in as if he owned the place. "*Buon Giorno.* Signor Valenti to see *Herr* Rothenberg," he said in Italian. "I believe he expects me."

"*Grüetzj.*" A thin-faced, spectacled man rose diffidently. "If you'll have a seat, *Signor* Valenti, I'll tell him you are here."

Volpone paced the carpet. *Zurchers* had always intrigued him, for some reason. Polite enough if one did not look too far beneath the surface, they reminded him of New Yorkers—stand-offish and brusque, often to the point of rudeness.

"This way, if you please, sir." The thin-faced man ushered him into a paneled office, closing the door discreetly as he left. *Herr* Rothenberg rose behind a large ebony desk, a pink-skinned, chubby bear of a man who smiled and shook hands cordially.

"Good afternoon, Mr. Volpone," he amazed the other by saying.

Dismayed, Volpone bristled. "I was led to understand that the identity of clients was held sacred in this firm," he rumbled.

"It is, sir." Rothenberg smiled nervously. "But you are much too prominent to make charades necessary. That is, I thought . . . Sit down, if you will. This office is soundproofed; you may trust me implicitly not to divulge your presence in Zurich to anyone."

Volpone eased himself into a chair, still glowering. "You realize how embarrassing it would be for me—for my country—to have the purpose of my visit disclosed?"

"*Aexgüsi.*" The banker seemed desolated. "I see that I have taken liberties by using candor, Mr. Volpone. I would not have offended you for the world, but last night when you landed at Zurich Intercontinental, went through customs . . ."

Volpone stroked his jaw. "How dull of me."

Rothenberg tugged out a handkerchief, daubing under his ample chin. "We are honored to have you visit our house," he said sincerely. "I would like you to understand that we observe strictest discretion at all times. Believe me, no mention of your presence will ever be made. It is second nature for us to observe—"

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"Shall we get to business?" asked Volpone, low-voiced.

The banker reversed a yellow legal tablet lying on his desk, offering Volpone a pen. "Be so kind as to write the number of your account, and we can complete the transaction immediately."

Volpone scratched his number quickly. Rothenberg pressed a buzzer, summoning a clerk. When the door had closed behind the clerk, the banker waxed his hands, saying, "May I take this opportunity to congratulate your phenomenal success with tube transit, sir."

"Er, thank you."

"On my last trip to London I rode the new Calais-Dover tube. Extraordinary! We Swiss have contemplated a similar project."

Volpone relaxed slightly. "I should think ITTS would be admirably suited to Switzerland," he said.

"We've made significant progress already," the banker assured him. "I've had several conferences with . . ."

Rothenberg broke off at a polite tap on the door. He got up and the clerk passed him some papers. Closing the door, the banker slowly resumed his seat, studying the material. "There are two separate accounts under your number," he remarked. "Which, er . . .?"

"I wish to close the larger account," said Volpone.

The banker looked up. "With accrued interest, the larger amounts to more than one and one-half billion Swiss francs," he said with a polite cough. "Well over four hundred million dollars."

Volpone drew a folded slip of paper from his jacket pocket. "Will you please see that the money is deposited in these separate American banks? I have indicated the way I want it distributed."

"Certainly. It will be done within forty-eight hours," assured Rothenberg. "And the other account—precious metals, principally tantalum and tungsten, I see?"

"We will leave that undisturbed for the time being."

Rothenberg came around the desk to shake hands. "It was a privilege to meet and to serve you, sir. Our services will he held at your complete disposal whenever you need them."

"Thank you. I must apoiogize for being crusty a while ago."

"Tut!" said the banker. "Apologies are unnecessary. I hope you enjoy your stay in Zurich, Mr. Volpone. *Wiedersehen.*"

So that's all there is to it, he thought, back once more in the brisk air of *Bahnhofstrasse.* All of his fluid cash was represented by today's withdrawal, plus what he'd realized from the sale of the yacht. He walked back to the hotel in a sudden dark mood, feeling penniless and insecure.

Arne Seymour was playing billiards with Volpone in the game

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room at Foxhaven the following weekend when the butler announced Vito Vico, causing the testy physicist to muff an easy shot. Seymour swore under his breath. "Were you expecting him?"

"No." Volpone racked his cue, instructing the butler to show Mr. Vico into the library. "I wonder what's on his mind."

"Just gangster business, I suppose," quipped Seymour.

"Shut up!"

"I was only joking, Alex."

Volpone's dark eyes were half-closed in thought. "I'm afraid Mr. Vico isn't noted for his sense of humor," he said.

"Do you want me to leave?"

Volpone pondered. "Stay, Arne. Perhaps it's time for you two to become acquainted. Follow my lead, and for God's sake be polite."

Vito Vico looked dapper, and the least bit suspicious, when Volpone introduced Seymour. "So you're the young man who dreamed up this wild air scheme," he exclaimed, not offering to shake hands. "Alessandro told me all about you." Vico chose an armchair. "I tried to call you twice during the week, Alessandro. Your man told me you were out of the country. Did you have a pleasant trip?"

"A pleasant change, yes," said Volpone. "I was in Switzerland—a combination of business and pleasure."

"So?" Vito Vico nodded, eyes averted. He inserted a cigarette in his ivory holder. "We must talk about a mutual problem," he said slowly. "My associates are displeased about one aspect of our, er, arrangement. They think they've been left in the cold if an atom bomb attack should come. An oversight, perhaps?"

"Oversight? Of course not, Vito. Provision will be made for your people in the redoubts. If you'll furnish me with lists of names, addresses, phone numbers, we'll have their data added to the computer tapes. They'll be called along with the others."

"Good." The Mafia Don nodded, exhaling a neat cascade of smoke rings. "Can the members of four families—between two and three hundred, including women and children—be accommodated?"

"I see no problem," said Volpone. "We have ample--"

"Enforcement!" cried Seymour without warning. "That's it, Alex. It fills a big hole in our planning."

"What . . . did you say, young man?" inquired Vico, startled.

"I know what he means," said Volpone. "Arne is thinking of using the services of your people for maintaining law and order in the purely civilian redoubts. Without some sort of enforcement, we would be faced with absolute chaos underground. Can it be arranged?"

Vico seemed pleased by the idea. "I don't see why not. Law and order," he said, chuckling. "It will be a new role for us." He inspected

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Seymour with new interest. "You are very direct, young man. I like that."

"Er, thank you, Mr. Vico." Seymour's manner was overly polite, almost fawning. Volpone retired to the bar and poured himself a dram of Scotch, listening closely.

"Tell me something," suggested the Don. "I'm curious to know how you ever thought of stealing Earth's air. I didn't believe Alessandro when he first told me about it."

Seymour took a seat across from the Don, leaning forward eagerly. "It's true, Mr. Vico; it would seem insane to do what we're doing. But you must view it in perspective. The time, the technology, and the temper of geopolitics were exactly right.

"We'd developed a vane-axial compressor of dazzling efficiency, had just finished a proposal on the air-driven ITTS transit system, and were facing ever-mounting threats of Sino-Sov aggression. I balanced the equation with a pair of answers, one satisfying the need of preparing for immediate attack, and the other—the inevitable corollary of the first—providing a sure, quiet way of gaining the upper hand over our enemies, one which they could never emulate in time."

"You are to be praised for such a daring idea," said Vico. "I see why your air project will take so long, and be so expensive."

"Expensive!" Seymour seemed surprised. "It's dirt cheap, sir."

Vico smiled. "Alessandro advises me that over eighty billion dollars have gone into the redoubt and air storage programs."

"Cheap," insisted Seymour, blue eyes flashing. "How can anyone put a price tag on survival?"

"You must admit he has a point there, Vito," said Volpone casually. "A point that's hard to evade. I've spent a major fortune, sold my yacht, and mortgaged my company to the brink of bankruptcy to further Project Luft. We have no choice—none whatsoever—but to go on. If we're attacked, what will *money* be worth?"

Vito Vico looked from one man to the other. "If I had not been fully convinced, you would not have seen one thin dime from me."

"We need more now," said Seymour bluntly. "A lot more."

Vico scowled, shooting a questioning glance at Volpone. "What does he mean? Is this true, Alessandro?"

Volpone looked grim. "A little more, Vito. I withdrew three hundred million in Switzerland last week. I'd hoped it would tide us over until the Federal auto license revenues became felt, but the lag will be too great. We desperately need a cash buffer."

"From . . . me?" Vico's eyes were cold. "How much?"

"One hundred million dollars."

"Impossible!" The Don flew up out of the leather armchair like a much younger man. "Every time

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we meet, you hit me again, Alessandro!"

Reflecting on his cavalier statement to Volpone long ago, Seymour asked, "What will you spend it on afterward, Mr. Vico?"

"Be still!" The Don glared at Seymour. "I complimented your directness just now, but there's a limit to what I will hear."

"I'm not really asking a lot," said Volpone, "compared to the sums I've personally contributed."

Vico folded his arms, frowning severely. "The families will never agree, even if that much money is readily available."

"You must explain the futility of holding back," argued Volpone in a calm voice. "Sink or swim, Vito; it's that simple."

"Simple?" Vico swung to face Volpone with a cunning look. "This time it's one hundred million. What will it be *next* time?"

"I will not ask you to contribute again. You have my word."

"You promise that?"

"Faithfully, Vito. Never again."

The Don rubbed his withered hands together. "It will be damned difficult," he warned. "*Damned* difficult." He turned to Seymour. "I have listened to arguments about the 'afterward.' A ruined civilization, with hundreds of thousands—millions—of Americans dead and dying. Plague, starvation. Such things are not conducive to business, if you know what I mean, young man."

Seymour smirked. "How would *Mafiosi* be treated by Sino-Sov Coalition conquerors—*if* they lived through the firebath?"

Vico sighed. "Young man, you have the annoying habit of thinking up answers even before questions are stated. Are *you* prepared for the death and destruction your scheme will cause? Think before you answer; I've been told it could mean the end of life on Earth."

"That won't happen." Seymour was adamant.

"You are . . . working to suffocate the world."

"Never, Mr. Vico. If it ever comes to all-out warfare," said Arne Seymour intently, "many, many individuals will die. But history repeats itself; northern Europe was depopulated at least twice before. Once by vast sheets of ice, crushing the land as they crept toward the equator from the poles, only to be repopulated later by a superior species—Cro-Magnon. Then again by the Black Death in medieval times. And Africa, and Asia, as well, I'm sure. It's probably a much older, much grimmer story than that.

"But the race survived. It always has. It probably always will."

Vito Vico shrugged. "I see your point. Murder is, after all, only murder; the numbers do not matter in the least." He started toward the door of the library, turning to face them with one fragile hand on the knob.

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"I will talk to them, Alessandro," he said wearily. "I will tell them. But I promise nothing. Never did I dream that your 'protection' could cost so much money."

XIII
April, 1988

Holding himself rigid, Major Lewis Craft stifled the exclamation of disbelief welling up in his throat by sheer force of will.

He closed his eyes and slowly exhaled, then glanced at Art Parkinson who lolled at his desk across the office, seemingly disinterested in what Craft was looking at in the desktop microfilm viewer. This afternoon, for the third time, Parky had opened the hulking safe built of tool steel which contained Volpone Industries' closely guarded secret data. Earlier in the week, Craft had been obliged to do honest research into heat exchanger thermodynamics, which provided his excuse for being here. He'd used today's session attempting to prove that a multitude of clandestine redoubts were scattered across the United States.

Irrefutable proof, contained in the microfilm spool laying innocently beside the viewer, told of forty-one redoubts. Two were overt, sponsored and funded by the Department of Defense, which accounted for the presence of military personnel and a government "black" file. The other thirty-nine had been constructed covertly, which seemed incredible.

But Craft had begun to sense an obscure logic behind the redoubts. The ITTS system's air-driven trains required deep subterranean bores, ergo the concept of equally deep nuclear-weapons-proof havens served and supplied by ITTS. Masking redoubt construction with a cover story that had workmen purportedly engaged in building ITTS facilities was a stroke of minor genius.

He had stumbled across the true stunner quite by accident, coming upon a set of drawings depicting what appeared to be a floating "island" replete with simulated derricks, sheds and other buildings. Digging deeper, Craft had unearthed a sectional view of the "island," in reality a camouflaged ten-acre-square intake much like the "farm" above the installation at Michigan Bluff.

Perplexed, he'd chased down some references given on the face of the drawing, encountering a steel and concrete pressure vessel which could be towed underwater to any specific site, then submerged in the manner of some titanic caisson. Underwater redoubts made little sense; there was no way for ITTS to serve underwater redoubts one hundred and sixty miles offshore.

He had pressed on, finding a dazzling general plan: the floating "island," linked by underwater lines to a great nest of air storage

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tanks submerged and stacked along vertical cables in up to seventeen thousand feet of water, and a sequence of drawings and specs for land-based air storage complexes. Bewildered, Craft had encountered the compressor information he'd been searching for in order to solve the heat exchanger problem. Then, six frames from the end of the spool, he'd come upon a milestone chart and a graph which plotted cryptic numbers against calendar years running entirely through the Twenty-first Century.

Locating the intersection of date and curve somewhere between 26.1 and 26.2 times 10^6, Craft had stopped short. Twenty-six million, one hundred thousand *what* this year? A tiny double asterisk called his attention to the bottom of the frame: "** VI Vane-axial Compressor Model RR-17-21."

Twenty-six *million* compressors? Who the hell was kidding who?

Dismayed, he'd gone back to the milestone chart and followed the block downward from 1988, finding the figure, .09 percent. He'd run his finger along the curve: .16 percent by '91; .51 percent by '97; 1.1 percent by the year 2004, and so on. Craft's skin had begun to feel clammy; the realization of what the percentages related to had hit him squarely between the eyes.

Air!

He sat perfectly still until the panicky feeling abated. Someone seemed intent upon collecting and storing a significant portion of the Earth's atmosphere! The proof was in his hands, except it wasn't really proof. Anyone could dummy up a set of documents; producing and implementing hardware to match was something else.

But the documents were not phony. Craft knew it with absolute certainty; knew it in his soul. The problem would be to convince someone in authority. He'd at last found out what Archer's "more" alluded to, and almost wished he hadn't.

He palmed the spool lying on the desk, slipped it smoothly into his right-hand pocket, then rewound the one in the viewer, extracted it and dropped it into the left-hand pocket of his dungarees. He casually bent in front of the safe as if restoring the spools to the rack, then rose on tiptoes, stretching expansively.

"That's it for today, Parky. Lock up whenever you're ready."

Craft turned around and froze. He was looking directly into the muzzle of a .45 automatic pistol held in Art Parkinson's hairy, rock-steady hand. Above the barrel, the super's eyes were cold.

"It sure as hell took you long enough," said Parkinson. "Put your hands behind your neck—slow-like."

Numbed, Craft did as he was told, glaring at the superintendent. "So it wasn't for real, eh?"

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"Call it a final exam," said Parkinson, "where we gave *you* all the answers. You flunked."

"Uh-huh. What happens now?"

"Well, you're a mite dangerous," drawled Parkinson. "Not that anybody'd believe you if you shot off your mouth. But, still . . ."

"Then the data isn't . . . phony?"

"Not at all," Parkinson told him. "It's the straight skinny."

"And you blew a whole compressor just to sucker me in?"

"Naw, coincidence. Usually we egg an engineer into looking through the file," said Parkinson. "If he digs around, then goes quietly back to work, we know he's Honest John. If he looks too long, maybe slips a few spools into his pockets . . ."

"Slick!" Craft clucked approvingly. "I suppose you know all about the compressed air storage bit, and go along with it."

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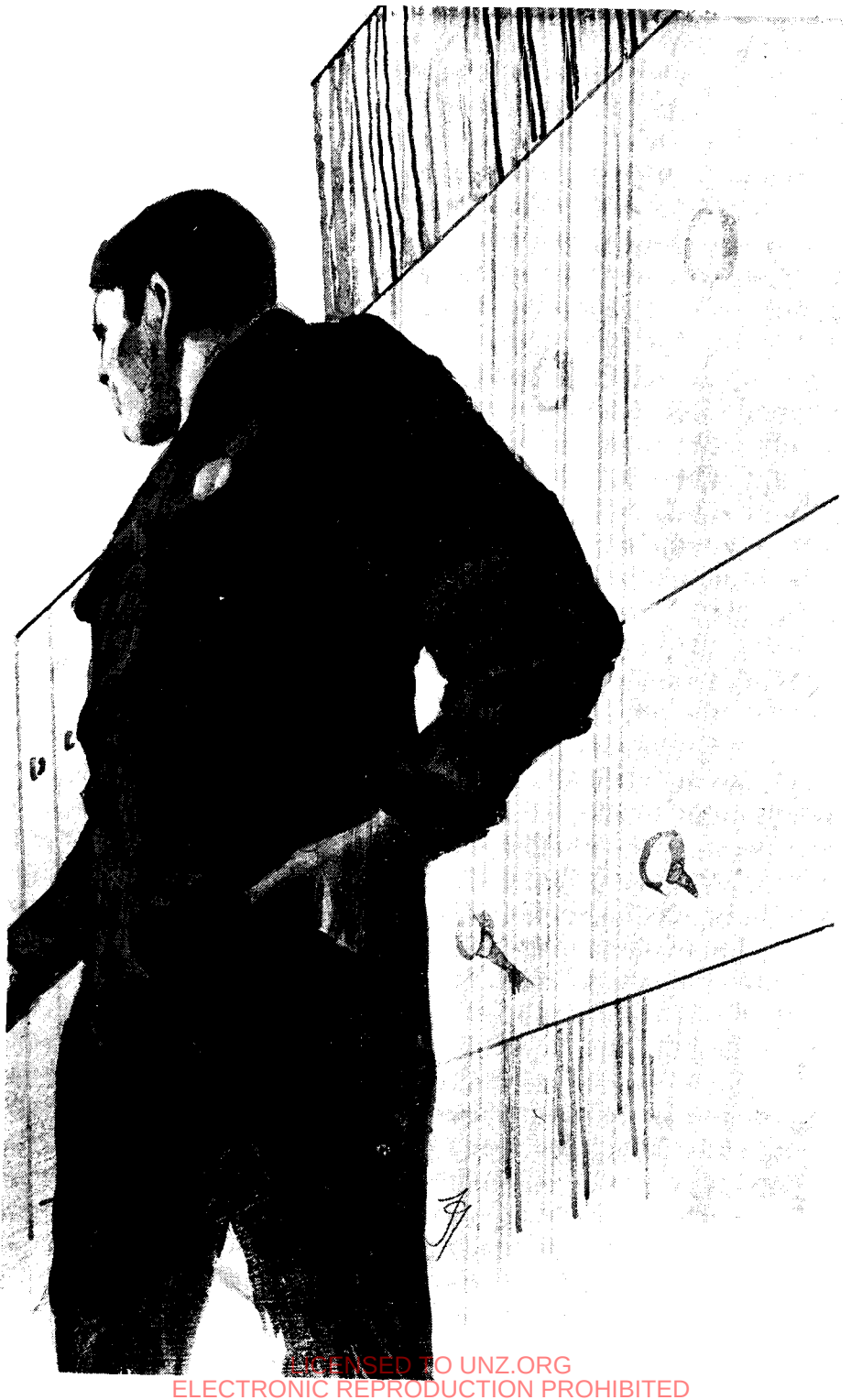

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Parkinson got to his feet, backing toward the door. "Murphy's Law: 'Mother Nature is a bitch.' We're just helping her along a little, is all. Now come over here," he said, holding the automatic waist-high. "Drop those spools on my desk."

"And if I don't?"

"Aw, don't make me use this thing," pleaded Parkinson. "I hate loud noises. Besides, you're a nice young fella. It'd be a shame."

Craft let his arms droop in resignation. "OK. It's your round, Parky." He took two halting steps toward the desk.

"Easy!" Parkinson raised the weapon, his arm extended.

Craft smiled lamely, laying one spool down. He tugged the other from his pocket, eyeing the pistol four feet from his chest. "You'll have a tough time scaring me with *that,*" he said. "The safety's on."

Craft hadn't expected it to work—not with Parkinson. But as the superintendent's gaze instinctively shortened to the weapon in his hand, Craft let go a backhanded swipe at the man's wrist.

The pistol went off alongside his ear with an agonizing *blam!* He continued his turn, driving off his left foot, and smashed Art Parkinson into the doorjamb with his shoulder.

The scuffle lasted mere seconds. Parkinson had cracked his head sharply against the door frame; he was twenty years older, and thirty-five pounds lighter than Craft, who managed to get both hands on the other's wrist, whip him around, and crack the sidearm free across one knee.

Craft scooped up the automatic, retrieved the microfilm spools, jamming one into each pocket, and stood poised.

Chest heaving, the super rubbed his temple, his eyes round and worried. "Aiming to kill me, are you?"

"No, Parky. You're a nice old fella, and it'd be a shame." One eye on Parkinson, Craft eased open the door and scanned the corridor. Satisfied, he jumped through the doorway and took off at a dead run.

Still woozy, Parkinson struggled to his knees, calling, "Don't run, Craft! Marines are on the way, with standing orders to shoot anyone who runs on sight. Come back here . . .!"

Craft bolted headlong down the corridor leading toward M Level's air storage complex, desperate to reach the main floor before marines poured down on him. He discovered there was something exhilarating about being totally committed.

When he approached the intersection, he went down on his belly, peeking around the corner of jackhammer-scored granite. A squad of marines was jogging toward him from the left.

He pulled back and raced toward the first office. It was dark inside; he whirled, whipping the door al-

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most closed, and watched the marines double-time past his hiding place, rifles at port-arms, their leader "Hup-hup-hupping" energetically. When the last marine vanished into the alcove leading to Parkinson's office, he launched himself full-tilt toward the concourse.

This would be the test, he thought as he hit the open floor. He cut diagonally under one of the fifty-foot-high service platforms, where a compressor labored day and night to force eight hundred atmosheres of pressurized air into a gigantic steel and concrete egg, striding along parallel to the far wall in order to place all possible obstructions between himself and the marines' line-of-fire. The main elevator shaft was more than a half-mile away.

Running easily, he heard the alarm klaxon's distant groan, resisting the impulse to look back. No one had ever dodged a rifle bullet by watching for it. The far wall loomed nearer. He tried to ignore the pain in his side, the fire in his lungs. Something was spoiling his gait, making him work harder than necessary. He found Parkinson's heavy automatic pistol still clutched in his right hand and flung it away angrily, hearing it thud to the stone floor and skid across the rough surface just as a swarm of bees droned past his head. Rifle-fire rattled far behind him an instant later.

More bees flew by. Craft jinked and jibbed, then swung under the next-to-last air storage tank's swollen belly, hoping the low ceiling would limit the marines' sighting. He wove around the buttressed pressure vessel's cradle as a slug went *spaang-g-g!*, ricocheting from the steel plate.

When he rounded the last cradle, it was bees, hornets, wasps, and perhaps a few yellow jackets. Rifle-fire sounded like belligerent popcorn in the distance. He did the last fifty yards in a weaving, bobbing sprint, and was less than twenty feet from the elevator alcove when white pain stabbed at his left calf.

His leg buckled; Craft sprawled on the stone floor. He crawled through the archway as stone splinters showered around him. Gasping for breath, he clawed up his dungaree trouser, inspecting the leg as best he could. Luck again; a grazing flesh wound, probably made by a spent slug coming off the floor. The ripped calf muscle bled freely; he couldn't afford to trail blood just now. He hastily wrapped a handkerchief around the leg, then gained his feet and hobbled to the elevator.

This time gold-plated luck prevailed; an empty car stood in the shaft. Craft reached in, punched the topside button, then ducked out again before the doors rolled closed. Good! The dial would indicate C or B Level by the time

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the marines got here. He prayed they'd take the bait as he dashed toward the rear stairs, a convenience used during construction phases which were to be removed and the stairwell sealed when ITTS went operational. He clattered downward and found that his luck held. It was after five-thirty; the equipment assembly chamber adjoining the raw tubes lay still and empty. The last construction crew had knocked off for the day.

Double tube orifices loomed in the shadows, black holes yawning toward distant Reno, interrupted now by the chamber which would one day become the redoubt's access-egress point. Craft picked his way through a chaotic jumble of stored magnetic levitation half-shells, wipers, pneumatic lines, welding gear, electrical cable, and conduit. Favoring his game leg, he jumped down into the nearer tube's right-of-way and felt a pang of dismay. No flatbedded electric trams were in sight. A dim red light in the leftmost tube beyond the tunnel mouth made him charge into the gloom, almost crashing into the first of four ghostly trams parked in a line.

He swung aboard the first, fumbling for the light switch in the operator's cab. The tram was soaking up current from a portable battery charger. He had no quick way of determining the charge level of the batteries, nor any practical method of ditching this tram in favor of one parked behind it.

He leaned down and unplugged the charger line, then energized the vehicle, shoving the drive lever forward against its stop. The tram obediently surged ahead. There was no need to steer. Hard rubber wheels, splayed outward in a self-centering arrangement, rode in the shallow valley formed by concave mag-lev shells. When five minutes of tube were behind him, he switched on the forward light, finding it unnerving to rush blindly along through inky darkness, though reasonably certain nothing lay in his path.

The tube walls flowed past endlessly, unmarked by distinguishing characteristics. Work crew foremen traveled by timing themselves against the tram's velocity, but Craft never wore a wristwatch. Let's see; the Sacramento terminus and Reno were one hundred thirty-four statute miles apart. Michigan Bluff lay squarely at the midpoint, while the Squaw Valley emergency elevator shaft was situated halfway between the redoubt and Reno. At fifty miles per hour the tram should bring him to the shaft in . . . Call it forty minutes, give or take a few. Which was too damned long!

He hoped the pursuit had stopped to comb the redoubt after meeting an empty elevator car topside. That, of course, was wishful thinking. Parky was cleverer than

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that. The only exits were at the eastern terminus, western terminus, the two emergency escape elevators, and the Michigan Bluff construction lift he'd used, hopefully, to lead the chase astray. Parkinson would order *all* exits covered.

Leg throbbing, he thought about how cold and dark it would be when he emerged. Oh, well; better cold than caught! But maybe he could do something about the dark. He bent and opened the compartment between the tram's front seats, freeing the large, square flashlight. He tried the on-off switch. The flashlight worked.

He lifted his head with a sharp twinge of panic. The tram had slowed perceptibly. Transfixed, he watched the speedometer needle crawl gradually counterclockwise, then snapped off the headlight to conserve energy. His luck had finally run out; the tram, probably used by the last crew to reach the redoubt this afternoon, lacked anything near a full battery charge.

He switched off the cab light to further conserve energy, riding in total darkness. The redoubt must be thirty-five miles or so behind him now, which meant at least four or five miles remained. Next time he checked, the tram had slowed to thirty-six miles per hour. Apprehensively, he watched the speedometer mete out his remaining freedom in diminishing seconds of arc, stemming the urge to brake to a stop and bolt headlong up the tunnel on foot. After seven or eight minutes more, he de-energized and let the tram coast, allowing the batteries to recover, hoping to conserve the last fraction of a remaining amp-hour of charge. Two or more miles of tube still lay ahead of him; the tram had no chance of making it. He would have to hoof it in a minute—on a bum gam!

Craft flicked on the flashlight; the speedometer registered less than eleven miles per hour. The wheels coasted over each butt-welded seam in the magnetic levitation shells with a faint clumping sound. He listened to the diminuendo thumping. One more, and he would re-energize and see what he could get from the exhausted batteries. One more . . .

He cast a nervous glance rearward, then whirled around in the seat and stared. A barely distinguishable diamond of light glimmered miles down the tunnel. Craft took a deep breath and energized the tram, watching the speedometer by flashlight. The acceleration was very gradual up to fifteen miles per hour, hung there for a short time, then began to fall off rapidly. This time there would be no recovery. He thought of a way to delay his pursuers as the tram slowed further, studying the speedometer, steeling himself for the effort. When the needle dipped to five miles per hour, he cramped the wheel with all his strength. The little tram protested; only ten de-

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grees of movement had been built into its steering mechanism. He bore down hard; the tram slowly climbed the concave mag-lev shells until, finally, the left front wheel rode over the lip. The bottom of the vehicle scraped to a halt with a grinding sound.

He leaped down, holding the flash, and ran clumsily along the center of the mag-lev shells toward distant Reno.

The tram, stuck effectively half-on, half-off the shell it rested on, would prevent his pursuers from pushing it ahead of them. It would delay the marines; that was what counted.

Craft pounded along, running hard, practicing something he'd all but forgotten since his football days—ignoring pain. After a while, the flashlight hindered him more than the bad leg. The light meant everything to him—probably his life. The emergency elevator, located adjacent to what would later become a twenty-foot-wide underpass fitted with hermetic doors, would look like a wide spot in the tube. He couldn't miss seeing it.

He ran on and on, eyes watering, lungs burning. Something made squishing noises each time he put down his left foot. Craft realized that it was blood. He didn't stop. He wouldn't stop for anything now.

Some time later he fell, ducking one shoulder instinctively and rolling. The flashlight slipped from his hand and clunked down the mag-lev shells ahead of him. Suddenly the flashlight went out.

Heart in his mouth, breath sobbing in his throat, Craft crawled forward to feel for the light in Stygian blackness. Not too far, he told himself. He groped ahead—and nudged it with the back of his hand. He grasped it and shook it gently. The light came on.

He rested on his haunches, almost crying with relief, and glanced over his shoulder. The diamond glint was brighter than before. He started off again determinedly, then staggered to a halt, wiping his eyes with his sleeve. My God! There it was—a dark band encircling the tube. He whooped in delight, running toward the elevator with new energy.

Breaking the glass with the corner of the flashlight, he cut his hand as he reached in to unlatch the outer door, then activated the lift control with the last of his strength. He collapsed against the elevator's wall, semiconscious, sucking huge gulps of air.

Later, he never remembered the ride topside. By the time the elevator carried him to the summit, he had partially recovered. He broke out a first aid kit in the A-frame shelter and quickly washed and dressed the wound, gingerly removing and swabbing the blood from his Wellington boot, then ransacked cupboards, finding a stack of cheap, lined plastic slickers.

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Donning one, he muttered, "Catch me now, you bastards!"

Sierra spring rains had eroded the snowpack; one ski tip actually protruded from the drift. He dug up the skis and poles, carrying them to the stone steps, having difficulty getting the bindings to lock over his Wellingtons, which were much less bulky than ski boots. Elated, he switched off the flashlight and poled away downhill in the chill starlight.

The spring snow was mushy, untrustworthy. Craft skied conservatively until he heard a helicopter thrash over the ridge beyond the trees. Behind it two others bore across Squaw Valley toward the summit shelter. He'd cut it close!

He made a careful turn, straightened, and headed for the line of trees. Again it was close; the first helicopter's searchlight swept the slope where he'd been as it circled to land.

Chafing anxiously under the pines, he waited until the other copters hurtled past overhead, then poled away viciously, turned downhill, and let it all hang out.

Skiing this fast on rotten snow invited disaster, but he had to reach the road before they discovered his tracks and began combing the area from aloft. He was tempted to stay near the trees for cover, but there the going looked even more treacherous in the starlight; watery and soft, with dark patches of bare ground showing now and again under the thick stand of Ponderosa and Jeffrey pines.

The first flare blossomed above and behind him near the summit, illuminating the slope with daytime brilliance. He cut back toward the trees in desperation. Two hundred yards more!

Craft dared a glance over his shoulder, and gloated; two helicopters were orbiting the ski run, working their way downward, searching, he suspected, for a man on foot. At any moment some sharp-eyed observer would spot fresh ski tracks in the soft snow, and the chase would be on.

At last he swung in under the trees, throwing himself sidewise in a flurry of ice crystals. He dropped the poles, unsnapped the bindings, and stepped out of his skis, dodging trees as he ran, limping, through shallow snow down toward the village.

He emerged near an apartment-hotel where he and Betty had once spent a weekend. He was glancing up and down the chilly road, when footsteps crunched behind him. Craft turned, nodding pleasantly to the man and woman who were walking toward a parked car, eyeing him curiously. "Evening," he called. "Wonder if you could help me?"

"Trouble?" asked the man uncertainly.

"Oh, the darned batteries are down in my car," said Craft.

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"Maybe you could call a garage," suggested the man.

"I would, but I've got a heavy date over in Stateline."

The man hesitated. "I suppose we could take you to Tahoe City."

"Hey, great! I'd sure appreciate it."

"OK, hop in." The man introduced himself and his wife.

"Nice to meet you both," said Craft. "I'm Lewis . . . uh, Paul. Paul Lewis." They shook hands.

As the runabout drew away from the curb, the woman remarked at all the bright lights flashing and flittering back and forth through the trees on the hill above them.

"I noticed that," said Craft. "Maybe they're shooting a movie up there." He settled himself in the rear seat, luxuriating in warmth as the car's heater began to make him feel just a tiny bit human once again.

Betty Dancer was mixing cocktails for Hoo Hanford and the Lewellyns when Hanford's butler beckoned from the pantry. "Call for you, Miss Dancer—a gentleman who says it's most urgent."

"Really?" Betty excused herself, thanking the butler. She turned on the extension phone in the kitchen.

"Betty?" asked a familiar voice, even before Craft's image grew to fill the small tube.

"Lew, what are you thinking of, calling me here at Mr. Hanford's? I'm working tonight, and—"

"Name the most important thing you have ever done in your life."

"What?" Betty inspected his image closely. "Where are you, Lew? Listen, Mr. Hanford has house guests—Senator Lewel—"

"No names," said Craft quickly. "Get a pencil and copy this number. Calling me back will be the single most important thing you're ever likely to do." When he saw that she had a pencil, Craft read off the number hurriedly. "Talk to you in a few minutes. Remember: *the* most important thing. And if the gent whose name you almost dropped is there, tell him I've got what he wanted."

Betty started to frame a retort, but Craft's image died in the tube. "Well, of all the . . .!" She returned to the living room.

"Something peculiar just happened," she told the others. "Lew Craft called, acting . . . strange. I'm to call back at this number immediately. Funny, he said it would be the most important thing I'd ever do in my life."

"Let's see." Hanford looked at the slip of notepaper, reading the area code. "Hm-m-m, northern California. Go ahead; call him."

Lewellyn chuckled. "He's finally decided to pop the question."

Betty shook her head. "No, it isn't that . . . Lew never *sounds* excited," she said slowly, "but he came as close just now as I've ever heard him. There was something

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about the way . . . Oh, and he asked me to tell you he had what you wanted, Senator."

"He what?" Senator Lewellyn became suddenly interested. "You mean the ITTS business? Mind if we listen in, Betty?"

"Certainly not."

"Let's use the phone in my study," suggested Hanford.

They crowded around Hanford's desk as Betty punched the phone code Craft had given her. Craft answered on the first ring.

"OK, listen; I don't have much time. I figured it would be harder to trace the call from your end. I'm hot; on the run, phoning from a booth in front of a service station in Tahoe City.

"I've got two spools of microfilm containing proof of the damnedest conspiracy you, or I, or anyone else ever heard of. I've been chased, shot, and I'm so tired I can hardly stand up."

"Shot!" Betty put her hand to her mouth. "Who shot you?"

"Too long a story, Luv. I called to let you know where I plan to bury the microfilm. It's too important to hang onto when . . . make that *if* they catch me."

"Just a minute." Lewellyn shouldered forward. "If who catches you? The police? Are you in some kind of police trouble, Craft?"

"No, Senator, marines—three helicopters full of them at last count."

"Marines? United States Marines?"

"Right. Glad you're there, Senator. Someone of your political stature has *got* to get this data into the proper hands if I'm—"

"Whoa, son," objected Lewellyn, "you're going way too fast for me. You've gotten hold of secret data, you say. Does it relate to the ITTS money boondoggle? Is DoT Secretary Volpone involved?"

Craft nodded emphatically. "It does, and he is—up to his hairy ears. But it's so goddam much bigger than that . . .!

"Listen, I have to cut and run. Really; the search will spread out fast when they don't turn me up in or near Squaw Valley."

"Squaw Valley! The skis," cried Betty. "Your buried skis!"

Craft grinned wearily. "They came in pretty handy."

"Skis? What the hell! Craft," said the senator in frustration, "if those marines do catch you, where will they hold you?"

"Uh, chances are they won't bother holding me," said Craft. "They'll shoot me."

"Lew!" Betty paled.

"That's the way it is," said Craft matter-of-factly.

No one spoke for several seconds. Then Hoo Hanford asked quietly, "Are you anywhere near the Tahoe Airport? It's located somewhere in the north shore vicinity, I believe."

"The airport's not far from here," admitted Craft. "Why?"

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Hanford's manner was speculative. "I own several aircraft," he said. "I'm thinking of coming up there to collect you."

"No good, Mr. Hanford. Thanks a lot, but they'll have every bus terminal, airport, and ITTS station in the state covered."

"It will work," insisted Hanford, "if we do it properly. Can you stay out of sight and be at the airport in exactly two hours?"

"Well . . . yes, I guess so."

"Look for a white tri-jet STOL with green striping," said Hanford. "We'll be at the far end of the main runway, opposite the tower. Got it?"

"Sure, if you're certain you want to mix in this."

"It's now seven-twenty," said Hanford, unimpressed by Craft's warning. "We'll touch down at nine-fifteen sharp."

"I'll be there," said Craft. "Mr. Hanford, can your plane take us to Washington?"

"Eh? You want to go there right away?"

"*Right* away—to the Pentagon. Bring a microfilm viewer along on the plane," urged Craft. "I'll show you some drawings and specs that'll curl your hair. Happy landing!" Craft's image faded.

Betty was crying softly after the call. Virginia Lewellyn comforted her, while the two men simply stood looking at one another.

"He sure as hell whetted *my* curiosity," said Lewellyn, his brow creased. "What should we do? Shall we take him to Washington? We could easily make fools of ourselves, old-timer."

"Craft never struck me as the sort who'd go off half-cocked," said Hanford. "He seems to have risked his neck to get that microfilm. We probably goosed him into it, Vic. The least we can give him now is a fair hearing. Let's make up our minds on the plane."

"A sensible notion. And a mighty magnanimous gesture, Hoo; going after Craft in your own plane like this."

"Who's the most influential person you know in the capital?" asked the publisher, ignoring the byplay. "Could you possibly talk our way into the White House if the situation warrants it?"

Lewellyn looked dubious. "An audience with President Blair? That just isn't practical, old-timer. But call the airport and have your jet stand by anyhow. I know someone who'll help us get the message across posthaste—if there is a message.

"We're on opposite sides of the aisle, politically. But if we can manage to get the old warhorse motivated and trotting, he'll get plenty of attention and action—right now!"

"Who do you have in mind?" asked the publisher.

"Senator Raymond Stillworth," said Lewellyn confidently.

TO BE CONCLUDED

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"The sniffer has something." The tech leaned away from his scope and pointed through the open hatch of the aircar. "Down by those rocks."

Jim Garvin craned his neck. There was movement on the ground, two figures scurrying for cover among volcanic boulders. Another car swooped to cut them off in a swirl of dust kicked up by its fans. Beside Garvin, Chief Proctor Starling reached forward to gesture to the pilot.

"Take us down." He made a note on a pad. "That's twice Holden's cut into our search area. I'd better check his profile for over-aggressiveness."

A pair of uniformed proctors came around the rocks, herding two outsiders. The man was about forty, though he looked older. The other was a boy of perhaps ten, with unruly red hair and a defiant scowl.

"Couldn't be Benton, of course," Starling muttered. He turned to the girl in the aircar's jump seat. "Know them?"

The girl—Debra, Garvin thought she called herself—nodded sullenly. "They're from our band."

"Trying to warn Benton, maybe?"

Debra laughed. "Randall runs a trap line. He's teaching his son to hunt." She narrowed her eyes at him. "Don't worry. They won't hurt you."

Starling grunted and turned from her abruptly. "All right, Holden, turn 'em loose and get back into the pattern." He tapped the pilot's shoulder. "Let's go."

Turbines whined and the aircar rose to take its place in the wavering search line. The line resumed its advance, Holden's car falling into place. Starling slammed shut the hatch and edged his bulk around in the narrow seat to face Garvin.

"Maybe next time. We didn't really expect to find him out here."

Garvin glanced at the girl's back. She was ignoring them. "I hope I can help. It's been a long time."

"Seven years," Starling said complacently. "That's what your card said. You did a—what?—mineral survey here."

"Right." Garvin watched the barren lowlands unrolling fifty meters below, stretching to the mesas that bulked forty kilometers ahead. People still lived in New Mexico, in the resort area around New Albuquerque and the sprawling mechanized ranches to the south, but the Four Corners Reserve had gone back to wilderness.

"Heck of a place to send a senior man," Starling said. "Half a billion people in the country, and only a few freaks will live out here."

Garvin nodded, resisting the urge to look at the girl. The population clustered along the big rivers and the seaboards, where fresh water poured from desalinization plants and food came from offshore kelp

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farms. The rugged land of the Corners didn't encourage development, but worse places had been swallowed by the coastal city that stretched from Vancouver Island to Magdalena Bay, with exurbs lapping into Arizona.

Mostly, it was the solitude, the feeling of being always alien among the brooding red mesas, that kept well-balanced people away. For all the talk of preserving unspoiled wilderness, few left the sheltered hives to see it. The Corners were deserted except for a few outsiders, too poorly adjusted for normal life. And now there was a biologist named Samuel Benton, who thought he wanted to join them.

"As for helping us," Starling added, "you already have. We'd never have found that outsider camp without you."

Debra straightened, looking full in Garvin's face. He glanced quickly away, then caught himself. It was foolish for him to feel responsible for the raid.

"Whoever was out here had to be near water." Garvin's hand strayed to the tension-release tablets at his belt, but he decided his anxiety wasn't that severe. "That was the only spring in the area."

"That's the sort of thing we need to know," Starling said admiringly. "You've been around a lot of wild places, haven't you?"

Garvin shrugged. "Field geologists are pretty rare, now that we can extract most minerals from the desal plants. After the Corners survey, I was in the Arctic Islands, then the Amazon Basin, gathering data for the numeric modelers."

The girl was studying him with a new expression. He met her gaze, and this time she looked away.

"Yet your psych chart showed pretty normal," Starling said. "I'd think you'd build up a lot of anxieties that way."

Garvin smiled, but inwardly he was puzzled. What did his psych chart have to do with his fitness for this job?

"You sound like my wife," he said. He'd never been able to explain to Joan the vast silence of the Arctic night, or the scrabbling life of the rain forest. She was at home in the hives.

"It's not so bad," he added. "But I've had enough of hunting rocks. It's time I got back to the office and earned my Level Five."

Debra gave a little snort and turned her back. Starling laughed.

"You've shocked our outsider. She's above such things." He clapped Garvin on the shoulder. "After a diet of these freaks, it's good to meet a young man with a healthy outlook. Do well here, and I'll have something to say about that promotion."

"That's what I want."

At least Garvin thought that was what he wanted. Joan was eager to have him home, where he could further his career. He'd resisted up

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to now, because he liked the Reserves, but lately he'd come to agree that his behavior was immature. He'd been married eight years, since his last year in the academy, and it was time to settle down.

"This could be your big chance," Joan had said. "One of the girls from personnel said the proctors called up all your files from the Minerals Institute and took them away. Whatever they want, it's important. If you'll be careful for once, it could mean your Level Five and a normal job."

Maybe so, but Garvin knew he'd miss the Reserves. The crowded holiday centers at Denver and the Sur were hardly better than the hives. It might be different if he and Joan had a child to learn to know, but they hadn't been chosen.

Garvin realized Starling was looking at him. "Sorry. What did you say?"

"Only that it'll look good in all our files if we bring Benton in. Think we can do it, Jim-boy?"

"Oh, we'll get him. From what you've told me, he's no outdoorsman." Garvin smiled. "You might not catch me out here, but you'll find him."

The sweep turned up no more signs of life that day. Garvin picked the night's campsite in a canyon where a trickle of brownish water ran, and watched while the proctors ran cables from one of the cargo carriers to a battery of lights around the portable shelters. Afterward, Starling sent a pair of aircars up into the dusk.

"We'll keep a patrol up tonight with infrared scanners to see that nothing slips past us," he told Garvin. "Tomorrow, we'll use sniffers to tackle the mesas."

"That's a lot of effort to find one man."

"Benton's not just any man." Starling dropped down on a rock, motioned Garvin to sit. "It's taken the Proctorate almost two hundred years of selective breeding, chemotherapy, and mass psychology to develop a man who can live with other men. We can't let that be endangered."

Garvin smiled. "Can Benton really do all that?"

"Maybe." All the joviality had dropped away from the chief proctor. He leaned forward, eyes intent on Garvin, his voice low and earnest.

"The Proctorate has solved almost every major problem of the bad old days. We have hardly any crime, a high living standard, and no international troubles worth mentioning. The necessary technology was available years ago. The holdup was human nature, and that's what the Proctorate changed."

He held up a hand as Garvin started to interrupt. "I know it hasn't been free. It'll take centuries more to breed reason and restraint

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into all the population, and until then our society is delicate." He looked up with a ghost of his old grin. "I'm on three tension-release tabs a day, and I'm fairly well-adjusted. There are a lot of pressures. Why, in the old days, the population density alone would have been enough to cause strife in our cities. The psychs say any large-scale disorder would trigger instability. That's why we have to take some measures that seem repressive."

"Like population control," Garvin murmured. Starling nodded eagerly.

"Right. The Selective Breeding Act, the job freeze, half a dozen other things, all necessary to keep order."

"And the outsiders mean disorder?" Garvin thought he was beginning to see. "They seem fairly harmless."

Starling stiffened, and his voice took on an edge of scorn. "That's what a lot of people think, Jim-boy, and it ties our hands. We can haul them in for rehabilitation, but half the time some judge turns them loose, and most aren't worth reclaiming anyway. But never forget, they're a menace to the society we're building."

He waved a hand toward the darkness. "How could any normal man live out there?"

"The Indians did," Garvin protested mildly. "This was all Navajo country once."

"Good comparison!" Starling laughed and clapped him on the shoulder. "The outsiders are like the Indians. Savages."

Garvin thought of the reproduced sand-painting and the hand-woven rug he had bought his first time in the Corners, two lonely mementos of the complex and tenacious Navajo culture that had fought absorption for five hundred years before succumbing to the coastal cities. He kept them at his office because Joan found them depressing.

Irrationally, Garvin found himself disliking Starling.

"Why bother with Benton, then?" he asked. "Is the Proctorate's pride hurt?"

Starling's eyes narrowed in surprised appraisal. After a moment, the look vanished as if a shutter had dropped, and the proctor grinned.

"Maybe, but it's more than that." He gestured toward the girl, who had come to sit nearby. "These freaks are no threat, because they're leaderless. Benton is a leader. He's a Level Two, who's twice turned down supervisory jobs to continue research."

Garvin felt Starling's thoughtful glance. "That should have warned us, but scientists are allowed some latitude. We weren't worried until he came here on a project, then disappeared."

"To the outsiders."

Starling nodded. "His work was

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in arid land reclamation. You've seen what he could do."

Garvin had. In a canyon near the outsider camp, the proctors found a test plot of food and fiber plants hardy enough to survive among the barren hills. Starling's men destroyed the plot and searched the camp like an invading army, but Benton was gone.

"He could change the whole outsider life style," Starling said. "Self-sufficient and organized, without population control or natural limits, they'd be a real menace. We'd have to take steps—" He broke off abruptly, without specifying the steps. His grin seemed a little shaky.

"Well, I've bored you enough. I'd better see to the camp. Think about what I've said."

"I will," Garvin assured him. "I'll be along later."

"Fine." Starling started away, then turned. "Don't get far from camp. There are animals—bears and things—around."

"I'll be careful." Garvin wandered down the canyon until a bend hid the lights, then settled on a rock. The whole thing still seemed strange to him. Starling was a Level Three at least, and surely knew his business, but there had to be other proctors as well qualified as Garvin to serve as guide.

Aside from his resentment at having his work on the cadmium recovery project interrupted, Garvin had found the experience disquieting. He'd been shocked at the proctors' apparent brutality during the raid, and by Starling's frank contempt for the outsiders. He still couldn't see that they were a danger.

He frowned at his nagging doubts and touched the roll of tension-release tabs. The psychs recommended one for any unusual stress, but Garvin didn't really like taking them.

A footstep grated behind him and he turned. Debra's soft voice was mocking.

"You'd better get back to the lights. The bears will get you."

"We're not high enough for bears." He made room as she sank down beside him. She was younger than he'd thought and, in the reflected light, quite pretty. "I thought you'd be under guard."

Debra shook her wrist. Metal tinkled. "A bracelet with a beeper. If I run, it's the rehab center for little Debbie."

"I'm sorry," Garvin said.

"Don't be. Your friend only wants me to identify stray outsiders and see how efficient the proctors are. Anyway," she added lightly, "didn't he tell you we aren't worth reclaiming?" She laughed at his surprise. "I saw him giving you Canned Speech 3-A. Our delicate society must be protected from the outsider menace."

"You've heard it?"

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"Repeatedly." A shadow crossed her face. "It's very big at the rehab centers. Maybe we are a menace. We live by hit-or-miss values that don't need the Proctorate's kind of protection."

"Any society needs order," Garvin defended. He knew it was what Starling would say.

"I know." Debra sighed and wrapped her arms around drawn-up knees. "Garvin, I'm no fanatic. Dr. Benton's no back-to-nature freak. We want law and education and industry and controlled population growth.

"But why should the Proctorate control it all? Why should a couple, say, be denied even one child by the Selective Breeding Act?"

The picture of the outsider man and boy flashed through Garvin's mind, bringing a curious tightness to his throat. "I don't know," he said.

The girl caught his hand. "Garvin—Jim—you're no insider. Don't help them find Dr. Benton. We need him." The tone held no humor now, only a naked pleading. Garvin drew back.

"He won't be hurt. A couple of months in a rehab center, and he'll be fine."

"You don't know what you're doing."

"Don't tell me how bad the centers are," Garvin said. "That's outsider propaganda."

"The centers aren't bad," Debra conceded. "The psychs are sincere. There's just one thing they don't understand: You can disagree with the Proctorate and still be a sane person."

Something between a laugh and a sob escaped her. "I was picked up in a sweep last June. The psychs expected to find a neurotic personality, so that's how my card came out. I was in a center four months before I learned enough about the tests to show up as a happy insider."

She looked at him levelly. "I won't go back. They're using drugs now. They'd turn me into a happy zombi, just as they'll do with the doctor." Her voice faltered. "You can't, Garvin. He'd—"

"Here you are." A shaft of light pinned them in place, and Starling's booming laugh shattered the stillness. "Sorry to interrupt, Garvin. Looks like you're doing all right."

Debra stood up quickly, slipping past the proctor to run toward camp. Starling followed her with the light a moment, then swung it back to Garvin's feet.

"We need to get back and plan tomorrow's search." He looked disapproving as Garvin rose. "I'm surprised at you, Jim, coming out here for that piece of fluff. You know how dangerous this country is."

"Sorry." Garvin let it go at that. He'd already irritated the proctor enough. Starling could help him win his Level Five, if that was so important.

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"Let's go, before the bears get us."

The planning session with the subproctors ran late, and Garvin was groggy when he joined Starling next morning. A pilot was waiting in the aircar, and lifted off as soon as they were aboard.

"We sent a car through that canyon you suggested," Starling said. "The sniffer got some traces high up, but nothing on a low pass."

"Good." Garvin drew a lungful of the cool morning air. "I thought that was the place I remembered. If we swing wide to the west, we can land on the rim without being seen."

Starling raised his eyebrows, but passed the order on. The pilot paralleled the canyon until Garvin gave the word, then brought the car down delicately on the mesa top. He stayed in the cockpit as Garvin and Starling swung down.

"This looks like the place." Garvin led the way toward the rim. "It's undercut here. Don't get out too far."

Starling laughed nervously and sidled back a step. "Don't worry."

Before them, the canyon walls dropped a sheer two hundred meters to the pine-dusted floor. Thirty meters down, an eagle wheeled dizzily in an updraft.

"Wait here." Garvin dropped to his stomach and crawled out to the edge, peering carefully over. A meter from the top, a niche had been cut into the pitted sandstone. From there, a series of footholds wandered down the cliff to disappear behind an overhang. Garvin grinned to himself and snaked back to Starling.

"Got it first try. There's an Indian cliff-dwelling about fifty meters down, with a wet-weather spring back in the cave. The survey turned it up by accident. You can't see it from the canyon, but that's why the sniffers reacted as they did." He paused. "Someone's down there."

The words had their effect, but somehow he didn't feel the triumph he'd expected.

"Benton," Starling murmured. He took a step toward the rim. "Can an aircar get in?"

Garvin shook his head. "No room. There's a path down to the canyon floor, but I doubt you could get up that way."

The proctor took another step, looking down into the gorge. Garvin saw him sway and grabbed an arm, hauling him back from the brink. The big man leaned against a tree and breathed deeply.

"Terrible place," he grated. He laid a hand on Garvin's shoulder. "Listen, Jim. I'll have to call for more men, with equipment. If he hears us, he might get away. You'll have to go down."

"I'm no proctor," Garvin protested. "I mean, I'm not trained."

Starling's voice sharpened suddenly. "You mean you don't want

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to see the dirty work. You asked for that Level Five, Garvin. Earn it."

Garvin started to argue, realized Starling had described his feelings perfectly. He retraced his path to the edge and slid over, trying not to think of the drop. Then his foot settled into the first step and he paused, looking at the proctor with sudden confidence. This was his place. He was at home, doing something Starling could never do.

"Call your dogs, Proctor," he laughed. "I'll be waiting. And wish me luck."

"Good luck," the big man responded grimly. He seemed recovered from his momentary dizziness as he turned back toward the flyer.

Garvin started down, keeping his eyes on the gritty rock, probing for each foothold. He wondered why he'd gone out of his way to bait Starling again. Joan wouldn't like that, when he got back to the city.

An eroded foothold crumbled under his weight, and he dug frantic fingers into the cliff while his legs swung over the canyon. Slowly, he worked his way clear. He wasn't in the city now, and it didn't seem to matter what Joan would say.

He came to the shelter sooner than he expected, working around a point with fresh scratches showing in the rock. The ledge widened under an overhang, where an ancient retaining wall bounded a courtyard for adobe ruins tumbled against the cliff. The wall was broken in one place, and the canyon fell away below. A man stood in the courtyard, holding a crude spear. The fire-hardened point was leveled on Garvin's chest.

Garvin froze. He was trapped over the canyon, a sheer meter from safety. He gauged the distance, but the shallow steps gave him no purchase for a leap. Swallowing hard, he found his voice.

"Dr. Benton?"

The man's hands tightened on the spear. He was older than Garvin had expected, with white hair and beard. Blue eyes regarded Garvin steadily from a sunburned face.

"It won't help to kill me, Doctor. Others are coming."

The old man raised the spear, and Garvin tensed for the blow. It didn't come. After a moment, Benton tossed the spear aside, to clatter on the retaining wall and vanish over the edge. Garvin caught a breath and edged into the courtyard, grasping Benton's steadying hand.

"I knew it couldn't last," Benton said. "I thought I could fight, but I'm too well conditioned." He leaned against the cliff for support. "You'll have to forgive me. The excitement and the altitude."

"I'm sorry, sir," Garvin said. "Help will be here soon. You'll be all right."

"Oh, yes. Adjusted and rehabilitated." He focused on Garvin.

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"They're doing great things with personality drugs now."

Something scraped on rock a few meters above them. Garvin said quickly, "People have to live together. Chemotherapy lessens disorder." He realized he was parroting Starling and stopped. Benton nodded absently.

"I'm afraid I was never very well-adjusted. Biology is not a science of compromises, and concrete truths imply abstract ones. Clichés like freedom and dignity."

A mesh ladder cascaded into the far end of the court, and two subproctors swarmed down, followed by Starling. Benton watched, then smiled at Garvin.

"The outsiders will remember what I taught them. Maybe their next leader can show them how to survive." He sighed. "As for me, I don't choose to be rehabilitated. Good-bye."

For a moment, Garvin didn't understand. Then he leaped forward, clutching desperately at Benton as the old man slid through the gap in the low wall and stepped into space.

"No!" Garvin's dive carried him almost to the wall. Strong hands hauled him back, and he heard Starling's voice behind him.

"Poor devil! Maybe it's for the best; he was worse off than we thought."

Garvin gained his feet and stumbled toward the back of the cave, where he was very sick.

He was still shaking when Starling came back and laid a surprisingly gentle hand on his shoulder. He gulped two antishock tabs the proctor pressed on him and choked over a sip of tepid water from his canteen.

"A dirty job." Starling led him back to the courtyard. The subproctors had collected their equipment and were ferrying it back to the mesa top. "Don't worry, it wasn't your fault. My report will make that clear."

Garvin grunted. "Where's Deb—the outsider girl?"

"We dropped her at their camp as soon as we were sure you'd found Benton." Starling shook his head, watching Garvin. "She was a funny one. Said to tell you to look her up, when you finally understood." He waited. "Does that mean anything to you?"

"No." Garvin met his eyes steadily. "Not a thing."

"Well," Starling said at last. "We'll leave a party to recover the body. I suppose we should take back his effects. Can you help?"

Benton had occupied one intact room of the ruin. It held a bedroll, a few books—the old ink-and-paper kind—a battered pipe, a stack of notebooks. Tacked by thorns above the bedroll was a yellowed scrap of paper. Garvin took it down and turned it to the light while Starling packed the rest into a bundle.

"Ready." The proctor slung the

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load across his shoulder and stood up. "What do you have there?"

"Poetry," Garvin said. He read softly:

" 'Every Night and every Morn
Some to Misery are Born.
Every Morn and every Night
Some are Born to Sweet Delight.
Some are Born to Sweet Delight,
Some are Born to Endless Night.' "

Starling clucked his tongue. "A symptom of his illness, I suppose."

Jim Garvin folded the sheet carefully into his pouchbelt. "Blake," he said.

"Huh? Black what?"

"William Blake. He was a poet, a long time ago." An unreadable expression crossed Starling's face. Geologists weren't expected to know poetry, Garvin thought bitterly. Scientists were allowed some latitude, but there must be no disorder.

"I think he meant your perfect society isn't quite right for everyone."

The big man took a moment to make up his mind, then decided to laugh.

"Watch that kind of talk, Jim-boy. The proctors will get you." He grinned. "You've done a fine job for us. It'll look good in your file." His eyes were thoughtful.

"Of course, we'd better run a routine psych check when your grade raise comes through. You've had a pretty traumatic experience."

"Sure," Garvin agreed, almost happily. "We can't be too careful."

He followed Starling to the ladder. He'd had a traumatic experience. It might even require a little rehabilitation, since the subject was known to talk back to proctors. But the psychs were doing wonders with personality drugs.

"Go ahead," Starling said. "I'll bring up the rear."

Garvin put a foot on the first rung, paused. The morning sun bathed the canyon rim with radiance, but deep shadows lay across the walls and floor, softening the outlines of a harsh and haunting land. Benton hadn't known this country. He'd known his own mind, though, and he'd given them a run for it.

An outdoorsman could do better. He'd know what to carry and where to hide. If he were poorly enough adjusted, he'd know how to survive, and how to teach others. His wife might be upset at the end of a promising career, but she'd get over it. And, if he were lucky, he might find a girl in the Corners.

Garvin was smiling when he reached the top of the ladder, and he threw a companionable arm across Starling's shoulders as they walked to the aircar.

He disappeared three days later.

The news was slow in reaching Starling, and he made a note to reprimand, mildly, the surveillance team. Then he read their report, chuckled, and walked down the hall to his superior's office. The

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proctor general looked up and laid aside his work when Starling came in.

"Garvin is gone," Starling said. "He walked into a drop on the outsider pipeline. He's probably back in the Corners by now."

"Excellent." He nodded Starling to a seat. "You're surprised?"

"I suppose so. Aren't you?"

"If he hadn't acted quickly, he wouldn't have been the right man. Once shocked out of his complacency, he was cool and decisive." The proctor general waved a hand at Starling. "Congratulations on your performance. And that quotation from Blake was an inspired idea."

The big man looked at the floor. "He wasn't hard to fool." He smiled wryly. "Most people are willing to believe a chief proctor is an insensitive oaf. I wish you could have found someone else to play the part."

"There was no choice, Ray." The other smiled in turn. "We could hardly trust the rank and file with the news that our society is no longer viable. We had to use senior men for the key jobs. Less than half a dozen of us know the truth."

"Did Debra know?"

"Nothing. She reacted just as the psychs predicted. I picked her as a likely candidate months ago, and she was tested extensively at the rehab center. She never realized things weren't just as they seemed."

He leaned back comfortably. "So the outsiders get their leader and Garvin gets the life he's cut out for. I'm glad things worked out with the girl."

"But it wouldn't really have mattered," Starling said.

"No. The outsiders needed Garvin. Their new agricultural knowledge will carry them past the subsistence level. Now they need a man to mold them into a new society, able to leave the hives and resettle the land." He chuckled. "It will be a great triumph for Garvin in a few years, when he forces the Proctorate to terms."

"And a triumph for the man who arranged it." Starling said it quietly, with no hint of flattery. His chief nodded.

"I suppose so, though it was all elementary after the problem became apparent."

He picked up his pipe and knocked out the ashes, then began methodically to pack it with merweed.

"We knew that the optimum birth rate wasn't being met, that our culture was losing creativity, going stale. Suicides were up and the economy down. The strange thing was that the answer was in our files all along.

"The Twentieth Century produced a wealth of scientific data, if the people had only known how to use it. One series of experiments, for instance, concerned a group of rats, overcrowded in their cages, their actions tightly controlled.

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They developed rat neuroses, lost their behavior patterns, eventually went entirely sterile and died out. It should have been a warning every step along our way. Instead, it was ignored."

Starling looked at him. "Until you found it. Until you planned this operation, then walked over a cliff to carry it out."

Samuel Benton shuddered. "I had a bad moment, when I thought the net wasn't going to snap out. It got me, though, and retracted into its niche before Garvin reached the edge. Rather melodramatic, but effective."

He puffed the pipe into life. "It was worth the risk. I have a lot of hope since my stay with the outsiders."

"It was a near thing with Garvin," Starling said reflectively. "A dozen times he could have seen he was being used. What if he had?"

Benton waved the question aside. "There were five names on the list. If we'd lost Garvin, we'd have tried another."

"It's strange." Starling looked up, his eyes puzzled. "We manage lives by the millions, routinely. Yet, when it's only one individual, it seems . . . well . . . immoral."

"I love it," Benton said simply. He laughed. "So do you. We're conditioned." He reached across his desk for a sheaf of paper. "Back to work, Ray. There's a new world coming, but until then, we'd better keep this one running." ■

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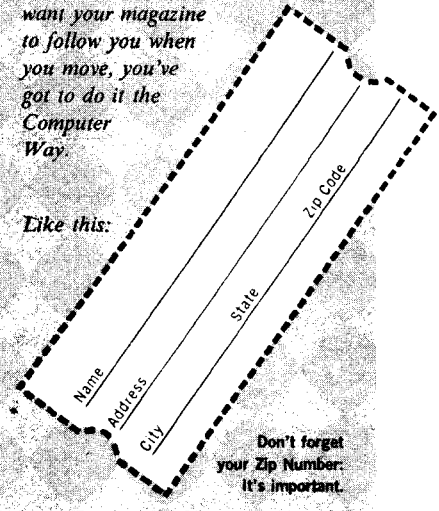

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If history really goes in cycles . . .

HERBIE BRENNAN

FOURTH REICH

I

"Is this actual film or a construct?"

"Actual film," Brother Matthew told him. "We have reconstituted the base material and used various chemicals to intensify the images."

"Astonishing," Allegro breathed.

Rank upon rank of brown-shirted SA troopers filled the screen. They were marching past a review stand where several tiny figures were taking the salute. The camera tracked in on one of them, a very upright, fat man with a stern expression.

"Is that the famous Fuhrer?" Allegro asked.

The monk shook his head. "No—that is Ernst Roehm. He was the original head of SA. Hitler had him assassinated in 1934 as part of the Blood Purge. I understand he was a homosexual."

"He certainly doesn't look it," Allegro remarked.

The ranks of SA gave way to ranks of SS. They wore black shirts, black tunics, black breeches, black jackboots. Their caps were

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black with a centered silver death's head. At first sight of them, Allegro sucked in his breath sharply.

"The *Schutzstaffel*—SS," Brother Matthew murmured impassively. Then quickly as the scene changed, "That's Himmler."

The uniform remained the same, but the man inside it looked less like a soldier than a civil servant. There was a smugly vacant expression on the plump, middle-class features. His right arm was raised stiffly in a salute to the troops.

Momentarily the screen went blank, then black. Allegro had half turned toward the monk when it flared again. This time the scene was a vast auditorium draped with flags and lit by searchlights. On the platform, a lightly-built man with plastered-down black hair and a small toothbrush mustache was giving a speech. He appeared to be excited. After a second, the film cut to a close-up of his face. The eyes seemed very dark, possibly an effect of the intensifier the historians had used.

"That's Hitler," Brother Matthew said.

For a second it did not sink in. Then Allegro echoed in astonishment, "That's *Hitler?*"

The historian nodded.

"The *Fuhrer?*"

"Yes," Brother Matthew said.

A new camera angle showed the entire platform party. Allegro could make out Himmler, seated impassively staring at his hands. Beside him was a giant of a man in Luftwaffe uniform who must have been Goering. He had been handsome once, but both body and face had run to fat. There were several others, all in uniform, whom Allegro did not recognize. But despite his interest, his eye kept being drawn back to the antics of the figure in the foreground.

"Is there sound with this?" he asked suddenly.

The historian rose to the control console and pressed a switch. Instantly the room was filled with a harsh, excited voice, speaking in Old German. Allegro had a scholar's acquaintance with the language, but though he strained, he could not make out the words: the delivery was far too fast for him.

He shook his head. "I can't understand it."

"That doesn't matter," the monk said. "Listen for a moment."

Allegro listened. The raucous voice washed over him in waves. After a moment, the figure of the Fuhrer ceased to look ridiculous and began instead to look dramatic.

It was possible to rationalize the effect, of course. The whole scene was rather nicely stage-managed in a barbarous sort of way. The searchlights and the giant swastika flags threw Hitler into a sort of central focus and—

Allegro was on his feet, gesturing lightly but convulsively with his hands. Brother Matthew walked

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away from the console where he had just killed the sound again. "Interesting effect, isn't it?" he remarked blandly. "Imagine how you might have acted if you'd understood what he was saying . . ."

Allegro stared down at his hands. They were still now, except for a slight tremor. He sat down slowly. He tore his eyes away from the screen and stared at the historian in bewilderment. "He did that to me?"

"Yes."

"What was it—some sort of neural pulse?"

"Hardly: the film is Twentieth Century."

"Hypnosis then?"

Brother Matthew sighed. "Perhaps. To be honest, we're not quite sure. The effect is more pronounced on some people than on others. Quite a few don't react at all."

"How did I compare?"

The historian shrugged. "About average."

"My God!" Allegro breathed.

After a moment, Brother Matthew said, "We have an entire department analyzing every extant film and sound recording of his speeches. They're not sure, but provisionally they think it might have something to do with his peculiar combination of pitch and rhythm. There are scores of emotional triggers in the speeches, of course: key words geared to the cultural responses of his listeners. He had an adviser called Goebbels who really seems to have had an amazing grasp of what made people jump, considering the primitive state of psychology in those days."

Allegro shook his head wryly. "He certainly made me jump. I can hardly believe it."

"Most people say that." The little monk walked over to a cupboard and opened it using a key hanging from a ribbon round his neck. He took out a bottle and two glasses. "If it's any consolation, the response wears off. You become immune after you've listened to him a few times."

On screen, the vast crowd in the auditorium was on its feet, faces convulsed, mouths screaming, arms rocketing forward in the stiff Nazi salute.

"They don't seem to have grown immune."

"Oh, no," the historian agreed. "They never grew immune—that was the trouble. But of course we don't have the same cultural background, so we're not subjected to the same emotional pressures. He must have been virtually irresistible in his own day, speaking to people in their own language."

Allegro stared at the screen. "No wonder he got as far as he did."

"As you say, no wonder." The monk walked back to his chair. "Now this"—he waved the bottle—"is an interesting liqueur compounded—strictly against the rules, you appreciate—by several of the

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more depraved members of our Order. May I, ah, tempt you—?"

But Allegro was watching the screen again with a sort of horrified fascination. In a series of blends and cuts, one scene followed another in quick succession. German tanks rolled across open countryside. Guns fired and buildings blazed. Heavy aircraft droned beneath the clouds to drop stick after stick of bombs through the beams of probing searchlights. Explosions mushroomed.

And then the camera cut back to the excited face of Hitler, eyes blazing, features mobile, body jerking in convulsive gestures.

Allegro swallowed. "You really think it's starting again?"

The historian filled two glasses with the liqueur. "Yes," he said very softly. "Yes, I do."

II

It was a heavy, gloomy mansion, one of the few surviving examples of late Nineteenth Century architecture. Its masonry was sound. It had survived tempest and flood—not to mention several minor riots—to provide the shell of a modern house today. Inside it was completely renovated, of course. Much use had been made of the fashionable Japanese partitions, combined with synthetic fur and silk.

The contrast between the rambling exterior and the slick new interior gave Karl a vaguely schizoid sensation.

There were three other houses of the same type in the street and not one of the remainder had been built any later than mid-Twentieth Century. This was the old quarter of the town, carefully preserved by the Party because of its links with the fabled Golden Age.

Because of the parades, the houses were all empty. The residents had been moved out yesterday and would be permitted to return tomorrow. It was perfectly standard security procedure.

When the residents had moved from this house, Karl had stayed. It was not difficult, since there was no check at that time other than a state trooper's cursory glance over the building.

The problem was to survive the check which took place immediately before the parades started. There were many people in the streets outside, a sign that the parades were due to start before long.

The house overlooked a square. According to the guidebooks, a gallows had once stood there. Karl doubted this: it had too many earmarks of the sort of thing the Ministry would write in. Besides, he was fairly certain hanging had been abolished long before these houses had been built.

Because the power was off, he could not use the jump chute. He climbed the stairs wearily, feeling primitive. The entire area conveyed

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this primitive feeling even when the power was on. That was why Victor Ling had chosen it for his latest rally. Unlike so many other districts, it did not offend his sense of history.

Climbing the stairs, Karl Ernst felt not only primitive, but very frightened. Even the long months of training could not combat this fear. His mind was running on, circling irrelevancies about Ling and the house and the decor and his own personal reactions. He was a slimly built man with long, delicate hands. He had brown hair and blue eyes and a friendly, open expression. He was very young.

The room at the top of the house was empty and looked as if it had always been empty, even before the house itself was evacuated. Perhaps it never had been lived in—except in the distant days when the house was new. He stepped over to the fireplace (the *fire*place?) and looked up. From this vantage point, and only from this vantage point, it was possible to see a hairline crack in the ceiling.

Karl unslung his pack, opened it and set up an extension ladder. He scaled it until his head was a foot or so below the ceiling, then reached up and pushed with the flat of his hand. A section moved away smoothly on a counterbalance. He continued to climb, pulling himself over the lip; and drew the ladder up after him.

The section slid smoothly back into place and, simultaneously, a light came on.

The cell was not very big, but big enough. A basic cube of permaplastic had been built into the roof-space and equipped to sustain life. There was cooking equipment and food stocks and a lavatory which automatically disposed of waste and disinfected itself. There was even a shelf of books.

Apart from the lavatory, he was unlikely to use any of this. But the units were standard. Everything was utility nowadays. Even for a holy espionage department.

Karl unslung his pack again. He took out the pieces of the rifle, each one floating in its own plastic bag of oil. He slit the seals with his thumb, allowing the oil to drain away into the lavatory pan. The rifle parts gleamed slickly as he joined them together with movements that were largely automatic, the results of months of training.

When the gun was completely operational, he propped it carefully against one wall. He had taken care not to load it.

He glanced at his watch. In about an hour the state troopers would make their security check of the house. Unless he was very unlucky, they would not find him. Fifteen minutes later, the main parade would enter the square. Another ten or fifteen minutes and Victor Ling would mount the rostrum.

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By that stage, Karl would be out of his hiding place and at the window of the room below. He would have his rifle.

As Ling began to speak, Karl would sight through the scope and shoot him dead. With a lot of luck, he might even manage to get away afterwards, but that was not really important, of course.

He sighed. It was a hell of a job for a priest.

III

Crossing the courtyard, Martin Allegro was not thinking of how incongruously comic the historical Fuhrer had looked, not even thinking of the gloomy future Brother Matthew had predicted. He was thinking how all the members of the Order seemed to look alike.

His guide at the moment—a Brother Samuel, if he'd heard correctly, which he probably hadn't—might have been a blood relative to Matthew. The same plump, rosy features, the same benign blue eyes, the same short tubby build; and, of course, the same robes and tonsure.

Allegro himself looked very different. He was a tall, slim man in his early fifties, well-dressed, graying, really rather distinguished. He had good features, with clearly defined planes to the face. As the historians looked the monks they were, so Allegro, in a manner of speaking, looked what he was.

But the chief historian, the "Abbot" as he called himself, did not look what he was.

Allegro was taken aback enough to stare momentarily. The man who rose from the chair was built like a Sumo wrestler. It was a resemblance that did not end with build: the face was flat and Mongoloid, with high cheekbones and tiny glittering eyes that folded into slits of fat at each outer corner. He wore a heavy, hanging black mustache. The overall effect was threatening.

He stepped forward with one huge hand outstretched. "Mr. Allegro. How very good to meet you. I really must apologize that I was not available when you arrived. I fear . . ." He let it trail without completing the explanation. There was no trace of the Orient in his voice, which was natural enough considering his position and the world situation.

All the same, his appearance was disturbing.

Allegro shook hands perfunctorily, wondering if there could be any possible doubt about the man's loyalty. But it ws really little more than a reflex. All he said aloud was, "Please don't distress yourself, Abbot—I have been watching some very entertaining film." He hesitated momentarily, then added, "Perhaps 'entertaining' is not quite the right word."

"No, indeed." He gestured Allegro into a chair and sat down

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himself. He sighed heavily, as big men sometimes do. "I left instructions that our theories on the present situation should be outlined to you. Was this done clearly, Minister?"

"Very clearly. I found them most . . . disturbing." Allegro suddenly noticed the abbot hissed his sibilants.

"It is pleasant to find you take them seriously," the other said dryly.

With inbred caution, Allegro leaned forward in his chair. "Seriously, yes, Abbot. But that's not to say I'm convinced, of course." One was required to keep one's options open at all times: it was the first law of politics. He leaned back to cross one leg over the other and look benignly at the abbot. He appeared more relaxed than he was. Could Victor Ling actually develop a Fuhrer's talents? At the same time, the coincidence of the SS troops was staggering. If it was coincidence. "Do you not feel, sir, that Premier Ling may have based his whole Party-State system on the historical precedent quite consciously?"

"I wish I did," the chief historian replied.

When he failed to enlarge, Allegro prompted, "But you don't?"

"No. I don't see how he could—we have the only accurate historical records. Certainly we have the only reconstituted film. He would have heard of Hitler, of course, in the sense that we all have—a semi-mythical personification of evil like Napoleon or Genghis Khan." The abbot's great hands clasped tightly on the arms of his chair and his bulk shifted forward. "But he could not have obtained accurately detailed information about Nazism without reference to our records."

"And he couldn't have seen your records?"

"Hardly."

Allegro tapped the arm of his chair thoughtfully with one fingernail. He looked up abruptly at the abbot. "You were prepared to show a great deal to me—including film. I'm not a member of your Order. I've taken no vows as a historian."

"You are a cabinet minister," the chief historian said blandly.

"And Ling is a head of state."

A slow, humorless smile crossed the abbot's features. "Hardly the same thing, Mr. Allegro. One does not even think of comparing the treatment of historians by your government in this country and the treatment of historians by Ling's Party in his own country."

Allegro fell silent.

"Well," said the abbot briskly, "time for tea." He rose to pull a hanging rope and distantly a bell tolled.

IV

A one-way sonic screen was built into the capsule room. As a result, Karl Ernst could—had he felt the

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urge—have sung, danced or screamed hysterically and no sound would have penetrated to the room beneath. By the same token, every noise outside the capsule reached him clearly. He could, as his instructor had once put it, have heard a mouse sneeze.

Just now he was listening to something more ominous than mice.

In his mind's eye, he could see the sober, stolid features of the state troopers. There would be at least five of them, armed with hand weapons. They would search mechanically, faces impassive, but eyes alert. They would search methodically, according to a predetermined pattern which experience showed produced the maximum of results for the minimum of effort.

If they found anyone, they would question him. If they found Karl, hidden as he was in a permaplastic cell of Jesuit design, they would kill him.

Despite the sonic screen, Karl found himself frozen into immobility, holding his breath, trying desperately to still every little sound. He was more frightened now than he had been when he entered the house originally. What price the cool, collected hero?

"Kaar deinen?" They were educated tones, probably the unit leader. "Find anything?"

"Banag swev, Hakan." "Not yet, Officer." Even through his terror, Karl found it strange how mechanical the voices sounded. He knew, of course, the police training was designed to turn men into robots—everybody knew that—but it was slightly eerie to find this was actually the result achieved, right down to vocal tone.

"Bene nachen dorst ven sorten!" the officer snapped. "Well, hurry it up then!"

In his hiding place, Karl sighed, suppressed the sound instantly, then remembered the sonic screen and relaxed a little. If the officer was impatient, it might mean the unit was behind schedule. The search would be more cursory for that.

Every little bit of luck helped.

They were directly below him now, possibly examining the fireplace. It was almost certain to draw their attention since it was an unusual room feature, even in houses of this age. The Order's psychologists had chosen the roofspace above the fireplace for that reason. If there were any shortcomings in the camouflage, they might well be overlooked because attention tended to be focused on the fireplace.

There was, mysteriously, the sound of metal on stone.

"Nachen dorst ven sorten!" the officer snapped again.

And then, as Karl's bloodstream ran to liquid ice, the dead voice of the trooper said, "There is a crack in the ceiling, Officer."

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V

"So," said the chief historian. He rubbed his huge hands together in a curiously childlike gesture as a novice placed the tray with tea things on the table between them. He looked up at Allegro and smiled. "Some of the old customs are worth preserving."

It was a gibe at government policies, but said with such obvious warmth that Allegro smiled back. "I wouldn't dream of arguing with that."

Moving like a wraith, the novice poured tea. As he withdrew, the chief historian glanced at Allegro over the rim of his steaming cup. "I think, Minister, I shall try to tell you everything now. Then you can take whatever action you feel necessary."

"*Recommend* whatever action I feel necessary," Allegro corrected him mildly. "I can only recommend, whatever my views. It is up to the Cabinet to decide about action."

He sipped his tea.

"Quite," the abbot said. There was silence in the room. They both knew Allegro's recommendation was a thing of power.

The abbot began to stroke the palm of his right hand with his left thumb. He drew in a deep breath. "Our Order functions to study history, Mr. Allegro. Our records are the most comprehensive available to humanity at the present time—"

Allegro coughed lightly. "But they are not . . . available." He was instantly sorry he had said it.

The abbot frowned. "I appreciate your annoyance, Minister. I am aware that not everyone agrees with our Order's policy. And naturally to someone of integrity like yourself, there is absolutely no reason why our archives should not be open. But to everyone . . . ?" He raised his shoulder and spread his hands in a massively Gallic gesture. "Not all the lessons to be learned from history are theoretical. There are technical descriptions of weapons which . . . but you're already very well aware of these arguments I've no doubt. Historians take their vows and undergo their training. It's our way of safeguarding—"

"Let me apologize, Abbot," Allegro cut in. "I won't pretend to be any happier with your Order's policies than most politicians, but I'm prepared to accept that your arguments have a certain validity."

The chief historian nodded briefly. "Let me try to tell you something about history itself. I suppose the most important thing to realize is that history moves in cycles." The dark slanted eyes began to smolder. "Many men have suspected this, Mr. Allegro, but we have the proof, we have the facts. All you need is to take a large enough segment—anything over five thousand years. You'll see the patterns for yourself. The repetition isn't exact, of course, but . . ."

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Allegro nodded. It was orthodox enough doctrine.

"You are probably well enough aware of the Order's teachings on this subject, Mr. Allegro," the abbot said. He stared intently at his hands for a moment, then looked up again. "We perhaps have laid less public stress on another of our theories. We believe history is the expression of . . . how shall I put this? . . . inner pressures. Our friends the Jesuits have coined a wonderful expression to describe this—"

"Psychohistory," Allegro said.

The abbot glanced at him in mild surprise. "Exactly. Events seen as the outward manifestation of energies playing through the collective psyche of the race. A fascinating theory, Mr. Allegro—and quite incredibly ancient, by the way: a philosopher called Jung was coming close to it with his ideas about what he called a 'collective unconscious' right back at the beginning of the Twentieth Century. But I must stick to the point. It is these collective psychological forces which are cyclical; not, so to speak, the patterns of events themselves—although the events follow the cyclical nature of the forces, needless to say."

He hesitated. "Am I making myself clear, Mr. Allegro?"

"Perfectly," Allegro said. "What we are discussing is a racial parallel to the individual. I am influenced from time to time by urges originating in my unconscious mind. You are saying the human race as a whole is subject to similar urges originating in the collective unconscious."

"Precisely! That's why history appears so irrational. It *is* irrational. Just as the unconscious mind is irrational. But that does not mean it obeys no laws. History obeys psychological laws—that's the key to understanding it. History obeys the laws of the unconscious mind. Once you understand these laws, you understand history." He leaned forward excitedly. "Once you understand the cycles in the collective unconscious, you can predict future manifestations of their pressures!" He subsided abruptly and said with great calm, "I'm sorry, Mr. Allegro: these researches arouse me. I sometimes forget they can be very boring to others."

"Not at all," Allegro said truthfully. He hesitated, then asked, "You feel we might be at the beginning of a cycle just now?"

"Yes, although putting it like that gives the wrong impression. Let me use your own excellent analogy with the human individual, Mr. Allegro. There are atavistic levels of our minds which are, frankly, better left alone. When energies arise from these levels—as sometimes happens in mental illness, for instance—a man begins to behave like a beast. We say he's mad, but I can't help feeling there's a very old term that's somehow

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closer to the truth: possessed." One huge hand came up in a fluid gesture. "Oh not by demons, of course. The man is possessed by constellations of energy from deep inside his own unconscious mind." The abbot paused, then added softly, "As an Order, we have concluded there are atavistic levels of the collective psyche as well as the individual. An upsurge of energy from these levels gave rise to the manifestation of Nazism in the Twentieth Century. I think we are witnessing the first manifestation of a similar upsurge in events of our own time." He stared at Allegro for a moment, then rose abruptly from his chair. "Let me show you something—it may, incidentally, give you deeper insight into why we want to protect the public from the detail of history."

He walked over to a table and depressed a switch. A tapestry on one wall rolled itself up to reveal a lighted screen. The familiar flicker told Allegro he was about to watch another reconstituted film. He half expected more parades, or possibly more war scenes.

"Toward the end of his career," the abbot's voice came through the darkness, "Hitler came close to being assassinated by several high-ranking army officers."

On screen, a small, bare room swam into focus.

"This was their punishment."

Watching, Allegro felt his stomach heave.

VI

Karl lay in a pool of sweat. There were no sounds from the room below now. The state troopers had gone. But over and over his mind replayed the same cameo.

—There is a crack in the ceiling, Officer.

—So, a crack in the ceiling.

—Yes, Officer.

—And what does that convey to you?

A pause.

—Nothing, Officer.

—Precisely!

Another pause.

—Why do you waste my time with talk of cracks in the ceiling?

Silence.

—There are many other buildings in this street. We are behind schedule.

More silence, then the crisp sounds of their departure.

Karl listened to the pounding of his heart.

VII

"Please forgive me, Minister. I was thoughtless."

Allegro dabbed a handkerchief to his lips. "Don't distress yourself. My fault entirely."

The novice reappeared, wooden-faced, to clean up the mess.

"The point I was trying to make," the chief historian said in distressed tones, "was that what you were seeing was not the aber-

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ration of a single man—it was a symptom of forces that were playing through the whole of German society at that time. Even after Germany was defeated in war, there were still millions throughout Europe who were terrified by the image of the Nazi bully boy. The most extensive wounds were psychological and they were very, very deep."

Allegro, his stomach somewhat settled, was thinking of the film he had seen of the mass parade of SS troops, their uniforms identical in almost every detail to those of Ling's *Stromgarde.* He closed his eyes in a gesture of profound weariness. "Let me be perfectly clear, Abbot. You are suggesting, as a chief historian of your Order, that Victor Ling is some sort of reincarnation of Adolf Hitler and—"

"Certainly not!" the abbot snapped. "That's the last impression I want to give. There is no question of anything mystical or occult in this situation. It may be that the pressures of the collective psyche actually throw up a man like Hitler or like Ling as part of their manifestation. Some of my best historians would actually maintain this. Personally I do not believe it. I believe that it requires an individual of a peculiar personality type—like Hitler or Ling—to unlock the atavistic forces of the psyche. I think there have been other periods since the Twentieth Century when the inner cycle recurred, but since there was no one comparable to Hitler on the world stage at the time, nothing very much happened. Today the cycle is again recurring. But today, entirely by chance, there is someone comparable to Hitler on the world stage: Victor Ling."

Allegro bit his lip and waited.

The chief historian said pensively, "He's no reincarnation. He doesn't look like Hitler and he doesn't sound like Hitler. In many ways he does not act like Hitler. But he has the same talent Hitler had. He can unlock some very nasty energies in the minds of his followers. That's why the movements are so similar."

"But they're not similar!" Allegro protested. "Victor Ling doesn't operate in Germany. He doesn't even operate in what used to be Germany. Ling's state is Anderstraad, Abbot. Anderstraad, not Germany. His followers aren't racial Germans. And Ling's own ancestry is Asiatic, so far as we know anything about it."

"You're still thinking of Nazism as something German. It is not. Remember the Jesuit definition of psychohistory: events seen as the outward manifestation of energies playing through the collective psyche of the race. Nazism happened to manifest in Germany because conditions were right at the time and Hitler was present as a catalyst. Today conditions are right in Anderstraad and we have Ling

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as a catalyst." He rose, with the look of distress on his features. "I'm sorry—this is necessary." He pressed the switch again.

It was a less sickening scenario. Reconstituted film had been married to modern constructs and what appeared to be actual video smuggled out of Anderstraad. Ling's personal emblem filled the screen: white with a red disc and black cross centered. The film cut to the flag of Nazi Germany: white with a red disc and centered on it the broken cross of the swastika. Then Hitler speaking and his audience in an uproar of excitement. Then Ling speaking: a totally different style, more polished, more civilized. It all seemed worlds apart until the camera swung onto Ling's audience. There were the same vacant, vastly excited faces, the same mechanical group reactions.

And then the SS marching and the Stromgarde. Apart from the buildings in the background, it might have been two films of the same thing.

"We have a computer evaluation of all this," the chief historian said abruptly. "Would you like to see it?"

Surprised, Allegro said, "Yes. Yes, I would."

The abbot pressed another switch. The screen images faded to be replaced by the familiar output patterns of a computer.

Allegro whistled.

"It's incomplete, of course . . ."

"If anything I find that even more convincing," Allegro remarked.

The abbot shrugged and killed the patterns on the screen. "So you see," he said, without bothering to say what.

After a long moment, Allegro said, "What do you suggest we do?"

The chief historian looked at him impassively. "The lesson of history is perfectly clear on that point, Mr. Allegro. You must persuade your government to declare war on Anderstraad."

VIII

Karl lowered the rifle, then himself. He went to the door of the room and opened it gingerly. The corridor outside was empty.

He sighed and softly closed the door again.

He moved to one side of the window and looked out. The street was thronged and the parades, of course, had started. There were obelisks of sandstone in solemn rows along the outer edges of the pavement, each one topped by a copper bowl of flaming oil. Ling's personal standard hung from every house along the route.

Along the center of the roadway, the troops were marching, their ranks occasionally broken by a rumbling antique tank. There were very few modern armaments on display—even the men themselves

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carried nothing more up-to-date than a self-aiming rifle—but this was in line with Ling's stated policy that Anderstraad threatened no one. All the display, all the flaunting of trained men, all the military parades were mere ceremonial, a ritual recall of the romantic, distant past.

Everyone knew he had the modern weapons, of course. That had been shown rather neatly when Anderstraad swallowed Ber Gada.

The crisp tramp of marching feet and the steady cheering of the crowd masked any sound Karl might have made in opening the window. All the same, he did it very carefully, very swiftly, stepping back immediately. He remained immobile for a long time, then moved again so he could once more see out.

Fingel Langstrom was on the reviewing stand, flanked by Kirt, Aardwend, Bergen and Sonorbad. There was still no sign of Ling himself, even though it was now past the scheduled time for him to take the salute.

A sensation of unease crawled along Karl's spine. Ling had a habit of making arbitrary changes to his schedule at the last possible moment, precisely to make assassination attempts more difficult. There was a general agreement that the habit had saved his life on more than one occasion.

Had he changed his schedule now?

Karl pushed the thought from his mind and took up his position, kneeling, at the window. He had been trained to hold the posture for hours if need be, although this would hardly be necessary. He rested the rifle on the window ledge. The dull steel barrel had been specially treated to absorb light, making it virtually invisible from below.

He tucked the stock comfortably to his shoulder and sighted lazily on Langstrom. Ling's Deputy seemed even more ill at ease than usual. There had been a lot of talk recently that his mind was cracking. Watching the agitated face through the rifle scope, Karl could half believe it.

Something in the tone of the cheering attracted his attention. He lowered the rifle and glanced over to his right. With a brutal constriction of the heart, he saw Ling's transport approaching. Ling himself was standing up in the back, a vaguely distracted expression on his face, acknowledging the crowd's cheers with desultory salutes. He looked for all the world what he actually had been once: a minor official in the Ministry of Taxes. Was this really the man the Order feared so much?

Karl's eyes strayed to the faces of the crowd. He shuddered.

Should he take him in the transport? It would be an easy enough shot, despite the vehicle's movement. Karl hesitated. His orders

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had been quite explicit. He waited.

The transport stopped. Langstrom hurried from the review stand. The two men shook hands formally and Langstrom, arms waving rather wildly, led Ling up the rough steps. Ling was in uniform, of course: not the gray of Supreme Commander, but, in honor of the occasion, the dramatic black of Stromgarde General. As he stepped to the front of the platform, Karl once more raised his rifle. A strangely fatalistic sensation had descended on him. His heart had ceased to pound, his hands were steady as a rock.

IX

"War?" Allegro echoed.

The abbot nodded soberly. "Providing you can persuade your Cabinet." For no apparent reason his shoulders slumped and a curiously desolate expression crossed the heavy features. "It may not be easy, even for you."

Allegro glanced impatiently at his watch. "I think, Abbot, I may now mention one or two matters which I have had to avoid previously for security reasons . . ."

The chief historian looked at him sharply and waited.

"I assume this room . . . ?"

"Quite secure, Mr. Allegro."

Allegro nodded. The historian's confidence was not misplaced—Allegro's own men had seen to that. Still, it never did to ignore the formalities.

He reached down beside his chair and lifted his briefcase. As he was opening it, he said, "To be perfectly frank, much of what I heard today did not come as a complete surprise. Many of the details were new, of course, but the general outline . . . well, let me just say I've had prior discussions with representatives of another Order who have come to substantially the same conclusions about Victor Ling and the Anderstraad Party-State."

"The Society of Jesus?"

Allegro nodded. "Exactly. The Jesuits. Their study of psychohistory may be more theoretical than your own, but it is no less deep. Cardinal Benvolio says more or less the same thing about Ling as you do."

The abbot sighed. An odd look came into his eyes. "Did they mention the possibility of preventative war?"

Allegro smiled slightly. "I hardly think war will be necessary." He pulled a sheaf of papers from his briefcase and held it out to the historian. "Here is a report of the Jesuit conclusions. If I may paraphrase for your convenience, they recommend that Ling be assassinated. They agree with your personal theory that men like Ling are catalysts. They feel that without him, the entire movement in Anderstraad will collapse." He

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coughed. "This is not, I may say, a theoretical recommendation. They have had one of their young priests trained and equipped as an assassin." He glanced at his watch again. "Unless something has gone badly wrong, he should have shot Ling by now." He looked up at the historian and smiled.

There was no answering smile. "It will not work, Mr. Allegro. Ling is immune to this sort of attack." The desolate look returned briefly. "I only hope to God he is not immune to preventative war."

Allegro lifted a querying eyebrow.

The abbot's dark eyes held him steadily. "It surprises me that the Jesuits of all people should make such a mistake. The collective unconscious is not simply the sum total of all our personal subconscious minds, Mr. Allegro. It has all the hallmarks of an entity in its own right. A crowd does not behave like the sum total of its components—it develops its own personality. So does the collective unconscious. What we are dealing with is the racial unconscious of Ling's followers—a collective psychic entity manifesting in Anderstraad. There have been attempts on Ling's life before, just as there were attempts on the life of the historical Hitler. They all failed." He fell silent for a moment, still staring at Allegro, then said, "This . . . thing that Ling can touch and stimulate won't let him be harmed."

Allegro smiled. "Oh come now, Abbot—isn't that bordering on the superstitious?"

But it seemed as if the abbot had not heard him. "Frankly, Mr. Allegro, what worries me is not the psychic entity but the cycle. It is possible events are spinning so closely parallel to what happened in the days of Hitler that we shall not be able to mount a preventative war." The desolate expression was back in full force as he stared deep into Allegro's eyes. "We may have to live through another Nazi era. It may be utterly inevitable."

Allegro smiled again. "I feel you may be worrying unnecessarily, Abbot. Ling is almost certainly already dead."

X

Pain exploded in Karl's skull. The rifle went off soundlessly, but the blow had jerked it upward so that the bullet hissed over the far rooftops. He rolled on his back as the jackboot slammed into his side.

"Pig!" hissed the state trooper. The boot slammed down again, this time connecting with the genitals. Karl whimpered and curled in a vain attempt to protect himself.

Through a red haze, he saw that there were three other troopers in the room, all armed with hand guns, all smiling.

From outside, through the open window, Ling's voice drifted in, amplified by the public address system.

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XI

It was an eleven-man Cabinet, but old Kirkgaard was missing, which would complicate the voting on an even split. Allegro finished his report in the crisp, unemotional voice he reserved for serious occasions.

He felt far less composed than he looked. The abbot had been right about assassination. Was it possible his fears were justified about an exact—or near exact—repetition of the cycle? Was it possible the Cabinet could not be persuaded into war?

Allegro looked round the faces of his colleagues. They were inscrutable.

He took a deep breath: it seemed as good a time as any to test the theories of the chief historian. "In the circumstances, Honorable Members, my recommendation is that we embark at once on a preventative war with Anderstraad."

He waited in the silence. The faces still remained inscrutable.

Finally Loris cleared his throat. "That's a pretty extreme recommendation, Martin."

"These are pretty extreme circumstances."

Knowledge might tip the balance, the abbot said. No one had been prepared to war with Hitler until it was too late, but knowledge that the cycle was repeating might tip the balance against exact repetition. It was a new factor, Allegro thought. A new factor had to make some difference.

"You really think Ling cannot be assassinated?" Madame D'ning put in. She leaned across the table, head tilted slightly.

"I don't know. I assume the basic theory sounds like superstition to you, just as it did once to me. At the same time, three of our own men and one Jesuit assassin have tried without success. Plus no less than seventeen abortive attempts at one time or another from within Anderstraad itself." He allowed himself the ghost of a smile. "Let's just say his security precautions seem a shade too tough for us to crack."

No answering smile. Impassive faces.

Jan Vinter was shaking his head. "But war, Martin . . . war!"

He had to play them cautiously. He had to use every ounce of his old political manipulative skills. "It's a serious step," he agreed soberly. "I don't make the recommendation lightly. I have had months of discussions with the only available experts in this field—the Society of Jesus and the Order of Historians. The Jesuits, as you know, originally favored assassination. So did I. Now both Orders are agreed the only possible measure is war. So am I."

He had never seen them like this, never found them so difficult to read. *Remind them of the cycle,*

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an inner voice was urging him. *Make use of the one new factor!*

Allegro closed his eyes briefly. When he opened them he said, "The pattern of the Twentieth Century was that no one was prepared to stop the forces manifesting until it was too late. There were at least half a dozen occasions when a comparatively small military action by the great powers of the day would have toppled Hitler and the entire Nazi Party. Substantially the same situation arose at the beginning of the Twenty-first Century with the Asiatic Nationalists. No one was prepared to take action. Consequently the time arrived when war was forced upon them. But on someone else's terms. The results were pretty grim."

Instinctively, he felt he might be reaching them. Still nothing showed on any of their faces, but his political antennae responded to the subtle atmosphere of the room. He pressed home his advantage. "The difference now is that we know about the cycles of history. We have the benefits of Jesuit and Historian researches behind us. Knowledge is power. We can use that power to prevent the cycle repeating." His eyes flickered from face to face. "The cycle does not have to repeat, my friends. The new factor in the situation is our knowledge. Now all we need is courage added to that knowledge." He paused dramatically. "The alternative to courage now is eventual war too terrible to contemplate."

"But can we be sure that really *is* the alternative?" asked Madame D'ning. She smiled. "You are asking us to make a practical decision on the basis of rather academic research."

Allegro looked around his Cabinet colleagues. They were nodding gravely in agreement with Madame D'ning.

XII

"The decision is taken, Mr. Allegro?" the abbot asked.

Allegro nodded.

"And the news is bad?"

Allegro sighed. "I could not convince them, Abbot. There was no way I could convince them. At one time I thought I was getting through, but then . . ."

"I fear you were attempting to move the entire weight of history," the abbot said softly. "It has often proved too much for one man."

Allegro leaned forward, eyes wide. "But what happens now?" he asked, a little desperately. "What happens now, Abbot?"

The abbot shrugged his massive shoulders. "The cycle turns. The jackboots march again."

"Oh God!" Allegro breathed.

The abbot stood up. "It is perhaps a little late for prayer, Mr. Allegro. We must prepare to meet another Armageddon." ■

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P. Schuyler Miller

THE LAST "ASTOUNDING"

In tribute to John Campbell, Harry Harrison has assembled an anthology of new stories by some of the writers who worked most closely with John to make Astounding Stories, Analog's predecessor, the great magazine it was. He suggests that we look on it as a "last issue" of the magazine he edited in those days—more Astounding and Unknown than Analog. Perhaps he found it in one of the parallel time-tracks we all knew so well in those days.

"Astounding," subtitled "John W. Campbell Memorial Anthology," is published by Random House. It has 332 pages of mostly exceptional stories, an introduction by Isaac Asimov (who tells us what it was like to build a tremendous story with John's not always gentle nudging), and a very brief afterword of appreciation by Harry Harrison. It will cost you the sum of $7.95.

If it had been published as an issue of Astounding, back in the lost '40's, it would be an issue that old readers remember. Not all the stories are blockbusters; they were not intended to be. Theodore R. Cogswell offers a contribution to the "Probability Zero" department, which demonstrates most plausibly (you can't argue with figures!) that we are in the late stages of a massive population *implosion*. L. Sprague de Camp offers "The Emperor's Fan," an amusing light fantasy of the kind he practically invented for Unknown and has not forsaken. Dr. Asimov explains the technological development of thiotimoline in the development of starships that are free of the hampering relativistic effects we all know. (He should investigate its other possibilities, now that Women's Lib is demanding a morning-after contraceptive that the man takes.) And Theodore Sturgeon has recovered a lost story from those very early days, when he wrote such stories as "The Hurkle is a Happy Beast." "Helix the Cat" warns experimenters of the danger of meddling with souls in bottles and the status quo anent cats.

But there are two, and perhaps three, stories in the book that belong with their authors' major work. The most outstanding is Gordon Dickson's "Brothers." He calls

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it peripheral to the main theme of his "Dorsai" stories (properly called the "Childe" cycle after the unwritten books that will close it), written to "illuminate" the dual theme of the series, which he explains in his introductory comments. This is the story of the assassination of Kensie Graeme on the ratty little peace-wanting world of St. Marie, and what his grim twin Ian did and did not do to avenge him. After each of these stories I feel that I should go back to reread the entire series, for with each one Gordy does penetrate and explore and illuminate his themes anew.

Right up there with it is an amusing and superficially light story in Poul Anderson's Nicholas van Rijn series about the growth and decay of the galactic trading empire, the Polesotechnic League. The League represents an important evolutionary stage in the Anderson "future history" (no less believable than Heinlein's or Asimov's), and "Lodestar" not only utilizes a new hard-science concept (that is, new in cosmology) but counterposes two philosophical positions important in our society . . . and builds a viable foundation for a "Third World."

This Third World theme is one that Mack Reynolds developed in a series of stories in Astounding/Analog, beginning with "Black Man's Burden" and continuing with "Border, Breed Nor Birth." They described the process by which a black American sociologist became the charismatic El Hassan who united all of Africa north of the jungle into a state offering an alternative to the programmed waste of the capitalist West and the communist East. (He has another story with the same theme and setting in Harry Harrison's anthology of new stories, "Nova 3.") In this final story in the series El Hassan is overthrown by a palace revolution, but finds that he must return. Mack Reynolds can convince you that this is how the Third World *must* evolve to survive. The story, by the way, is "Black Sheep Astray."

What else would you like in a "last Astounding"? It's here. Hal Clement has a hard-science problem story set on Mesklin, the strange planet of "Mission of Gravity," in which a team of Mesklin students and their human teacher have to get out of a trap by force of chemistry and physics. It is called "Lecture Demonstration." George O. Smith is back with an exploit of the "Venus Equilateral" team of fond memory. They are involved with matter transmission, a pair of Rh babies, and the geometry of the solar system. "Interlude" is slight, but fun.

Alfred Bester wrote his best stories for other magazines. Nevertheless, he came up with another "fun" story in "Something Up There Likes Me," in which a bio-experimental satellite is metamorphosed into something amusing but scary. It will remind you of Harlie more than Hal. Ted Cogswell, not satisfied with his zero-probability offering, teams with Theodore L. Thomas again for "Early Bird"—a mind-boggling yarn about what happens to an overeager scout ship forced to take

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refuge on a most remarkable world. Thomas I don't know, but I can see Cogswell as Kurt Dixon of the Imperial Space Marines, whom we met years ago in "Spectre General."

Clifford Simak is another who has written a last story in one of his great series for this "last Astounding." In "Epilog," the last of the Webster robots comes to the end of his eons on Earth. Mankind has found a new home and a new nature on Jupiter. The Dogs, after building Jenkins a practically immortal new body, have gone to the "cobbly" worlds. The Robots have gone out to the stars, leaving Jenkins and the mice in a small oasis in the midst of the world city built by the Ants. But now the Ants are gone in their turn . . .

Harry Harrison's own story is left: "The Mothballed Spaceship," in which the hard characters of the "Deathworld" stories take on the challenge of breaking into and taking over an ancient warship that defends itself all too well.

The John Campbell who made Analog out of Astounding would probably not have bought all these stories if he were alive. He would have bought the best of them, and he would—as the authors testify—have shown them how to make the best even better. And I think he would have enjoyed them all.

RENDEZVOUS WITH RAMA
by Arthur C. Clarke • Harcourt Brace Jovanovich, New York • 1973 • 303 pp. • $6.95

This is the kind of "hard" science fiction that is not likely to appeal to the people who were fascinated by the final part of "2001"—but it may give a few of them an introduction to the kind of story in which the suspense derives from the slow, erratic, and never complete unraveling of scientific and technological mysteries.

Rama is a colossal starship—a cylindrical world fifty kilometers long and twenty in diameter—which approaches the Solar System in A.D. 2130. It is traveling at a speed that will take it through the system in about forty days, and it has not been near another star for at least two hundred thousand years. Evidently it is a dead world, and the crew of the only nearby ship, the *Endeavour*, have only a short time to break in and explore it before it leaves the Sun forever.

There is no real plot in either the old pulp or the new psychological sense. Commander Norton and his people do find their way inside, and begin to explore the extraordinary and fascinating world they find there. Then, as *Rama* approaches the Sun and absorbs its energy, the hollow world begins to come to life. What results is every bit as strange and haunting as the hegira and rebirth in "2001."

BEST SCIENCE FICTION STORIES OF THE YEAR
edited by Lester del Rey • E.P. Dutton & Co., New York • 1973 • 251 pp. • $6.95

Can it be that we are going to have only four "best" anthologies for 1972, instead of last year's five and the threatened six for this year? This is Dutton's and del

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Rey's second selection, and the last to come to my attention. Where Harry Harrison and Brian Aldiss had twelve stories, Donald Wollheim had ten, and Forest Ackerman had eight (and a convention speech), this book has fifteen. Five are from Analog.

Three of del Rey's choices are also in the Wollheim "Best"—the only duplications in the four anthologies. They are James Tiptree, Jr.'s already classic time travel story, "The Man Who Walked Home"—from the far future—Vernor Vinge's story of a personified starship, "Long Shot" (from Analog), and Phyllis MacLennan's love story of a man and an alien, "Thus Love Betrays Us."

If you read Analog carefully in 1972, you saw four more of Lester del Rey's choices. (He's been in the business a long time, as writer, editor, and critic. He knows good stories.) Larry Niven's "Cloak of Anarchy" may be the best of the four. It shows us a future California in which the freeways have been converted to parks and dedicated to a nominal anarchy. But *real* anarchy, when it comes, is something else again. Donald Noakes' "The Long Silence" could be set in another part of the same world. Can today's young people physically and psychologically endure quiet?

Isaac Asimov is here with a little parable: "The Greatest Asset." Find out for yourself what it is; Isaac is entirely serious about it. And Analog's last representative is C.N. Gloeckner with "Miscount," a grin-producer which suggests that bureaucrats and politicians are the same the galaxy over.

My own choice for best story in the book is "The Meeting" by Frederik Pohl and C.M. Kornbluth, the last product of that fabulous collaboration and certainly one of the finest. The story peers compassionately into the affairs of a future PTA, when a parent of a retarded boy must decide whether he wants another child's brain in his son's healthy body. You won't forget it. Nor will you forget William Rotsler's "Patron of the Arts," which creates a new and impressive three-dimensional art form, not sculpture and not painting, and makes the "in" society of the art patrons very real.

Gordon Eklund, in "Underbelly," illuminates the tragedy of immortality. R.A. Lafferty, in "Eurema's Dam," demonstrates that stupidity is the mother of invention. Robert Silverberg, in "When We Went to See the End of the World," may be saying either of two things: that the future is what we think it will be, or that the paying public is bored with the truth. Robert L. Davis introduces a remarkable creature on a very hostile world in "Teratohippus"—and makes you sorry for it. Thomas N. Scortia's "Woman's Rib" is the story of an aging scientist and her android, and Jack C. Haldeman (*not* the Joe Haldeman of "Hero") has a story rather similar to Vinge's "Long Shot," about the computer which has been appointed babysitter for Man—until the Establishment circuits decide that there is no such thing as Man.

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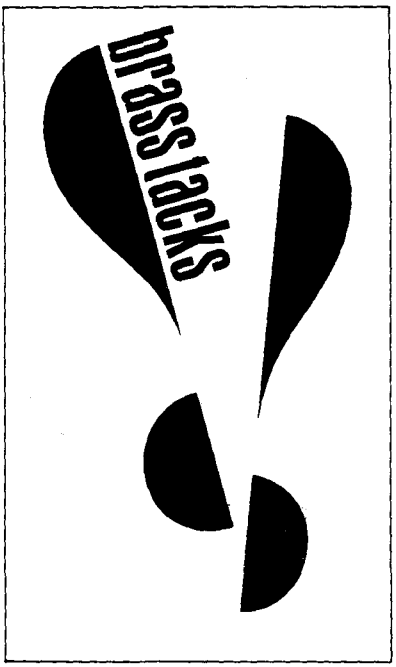

Dear Mr. Bova:

I was very surprised by the reaction of readers to your August editorial, "Giant Step Backward." When I first read the article I was somewhat in agreement with the views you stated. However, now having heard the arguments of the other side, I am completely in agreement with you.

One of the things that struck me most was the hypocrisy of the writers. David Odom stated that "science and logic are based on the premise that you cannot validate a point utilizing a negative," while in the preceding two paragraphs he defended the Genesis theory by showing the faults of the theory of evolution. Many of the writers mentioned the faults of evolution without mentioning any of the faults and contradictions of Genesis.

Also, a lot of misinformation and misinterpretation was shown. Jay Disbrow wrote of the slow development of living cells from chemicals as if evolutionists were stating that fish had suddenly started growing in the ocean in the matter of a few minutes. Laboratory experiments have shown quite clearly that amino acids, the basis for proteins, can be manufactured from inert chemicals. Lawson Winton seems to think that evolutionists deliberately misrepresent the truth to make their theory more palatable, for what reason he does not explain.

The point remains that even if the theory of evolution was disproved tomorrow, nothing would be proved regarding the theory of creation in Genesis. Also, despite the fact that most of the writers presented that theory with a scientific basis, it is still an integral part of several religions, and teaching religion in schools is directly in violation of the First Amendment. If one religion's theory of creation is to be taught in our schools, then all religious theories of creation should be taught. The only problem is that there are so many of them. Perhaps our high schools should offer a semester on theories of creation.

Being a victim of the new California Board of Education ruling, I was able to see first-hand the reactions of the teachers and students affected. No teacher and very few

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students that I talked with felt the ruling fair or reasonable. The reaction of a class to being taught the Genesis theory along with evolution was boredom and ridicule. Frankly, the idea isn't working.

The advocates of Genesis simply are not examining the facts . . .

BENJAMIN KLATSKY
157 El Toyonal
Orinda, California 94563

There's nothing wrong with teaching Genesis as history, poetry, psychology, or even religion. But in no way is it biology!

Dear Mr. Bova:

After rereading "The Jungle" I submit to your feeling that it is a warning. But . . . I have faith that we will not let Hudgins' projection become reality . . .

I want to congratulate you on your article, "A Program for Star Flight." It was very interesting and convincing . . .

In "Star Flight" you may have answered the question raised in "The Jungle." I hope not!

TIMOTHY H. ERICKSON
10925 Bond Road
Adelphi, Maryland 20783

The first interstellar astronauts will be *exiles!*

Dear Mr. Bova:

The appearance of "Whalekiller Grey" in your October issue was very saddening, indeed. Is it possible that Mr. Cochrane needs to experience the pain of a "killing lance" in order to see the cruelty of whaling? Certainly in Mr. Cochrane's year 2244, whaling will be an unnecessary practice, good only for those who need their egos inflated by triumphing over a creature too dumb to know how to defend itself properly or hindered from doing so even if it could! I fail to see why Mr. Cochrane has taken upon himself the task of glorifying such a contemptible practice and the people who practice it for their own satisfaction . . .

Let us pray that by the time we reach the year 2244, we will have long since banished the cruel and inhuman practice of whaling. By that time its necessity should be questionable enough . . . Will we need whales for oil in the year 2244? We barely need them for oil now. And food? If we have to resort to eating whales in the year 2244, I hope the water is clean enough for safe consumption.

But let us forget all that. Why not a straight laser beam to the head? Much simpler, cleaner, safer and, just as important, much more merciful. Remember, this is the year 2244 and we are not barbarians.

EVAN CANTOR
9008 Hamilton Drive
Fairfax, Virginia 22030

In the year 2244, it's possible that population pressures would make whalemeat an important food item. See Arthur C. Clarke's "The Deep Range." There are nations today who are hunting whales into extinction because of their own internal economic necessities (or at least, what they see as necessities). Personally, I'm on the side of the whale. There is no more magnificent beast in the world, and if we drive the whale into extinction it will be a

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blot on our generation that can never be expunged. But—there are still highly civilized cultures that practice bullfighting. And ritual sports that end in death have been a part of humanity's heritage since prehistoric times. I don't think Cochrane's brilliant extrapolation is improbable. But I don't like the idea of it, all the same.

Dear Mr. Bova:

You really must stop making the fact so much more fun than the fiction. But the October issue was the best for some time; I could have done without some of the Melville/Kipling dialogue in places, but at least they tried. Now, here follows an irrelevant footnote to Carl Sagan's editorial:

Granted, the last two centuries have seen the greatest rate of technological development ever known. But, Sagan's examples? "Information could be sent from one city to another no faster than by horse." Well, primitive instruments such as African drums had individual ranges of no more than twenty miles at very best, but could relay messages from village to village across several hundred miles overnight. The first telegraph stations—actually semaphore relays—were set up at the end of the Eighteenth Century. The earliest speed test I have data for was on a two-hundred-mile link between Plymouth and London: the message was sent and acknowledged in three minutes.

The catch in this demonstration of early expertise was that the systems were only available to an elite. Cultural achievement can be measured either by its peak or by its average. His example confuses these: two centuries ago travel from Liverpool to London (average) was more readily available to the public than is a journey from the Earth to the Moon (peak) today. The two journeys are not strictly comparable. The important innovation about the recent changes Sagan mentions is that they are changes in the *average* lifestyle. This *general* spread of technology is what causes the drastic alterations in social environment.

Always carry a grapefruit.

DAVID REDD
34 Laburnum Grove
Haverfordwest
Pembs, Wales

The first change is in capability. Then this new capability becomes available to an elite, and finally to the general populace.

Dear Mr. Bova:

Apocalyptic Optimism, anyone?

The Guest Editorial by Carl Sagan and the science article by Harry Stine (October 1973) bring to mind just one more facet of man's search for species immortality and personal quasi-immortality. It seems to me that the chief motivation for a push to the stars is Apocalyptic Optimism—the Earth may go to hell but we've got enough of our eggs out of that one traditional basket for the human race to survive.

I first heard the term Apocalyptic Optimism in a science-fiction course about three years ago. The

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term was coined by Curt Smith . . . hero of the next, or perhaps current, Heinlein novel. Curt Smith's example for the use of the term in science fiction can be found in "A Canticle for Leibowitz," in which man rises and falls, rises and falls, until human knowledge, and some humans, are transported to the stars. It's as though each failure gives birth to one or more new attempts. A planet is destroyed and one or two more are settled . . .

You will find all kinds of Apocalyptic Optimism in SF today. Last year there was "The Gold at the Starbow's End" and "The Gods Themselves," and Isaac Asimov was repeating himself because the final portion of his Hugo-winning novel had been done as a nonfiction article called "Selenize or Die." Yes, he's among the diehards of Apocalyptic Optimism. And Fred Pohl championed the cause of "Earth Is for Losers" in his story.

Arthur C. Clarke has predicted that there will be no more than one million people in space before the end of the Twenty-first Century. I predict that the Social Security Administration will spend more money on geriatrics than space in four years—one presidential term—than NASA spent from John Kennedy's Moon-program announcement through Apollo 17, thus upsetting Clarke's prediction (oh well, he was over thirty when he made the prediction) . . .

JOHN ROBINSON
1–101st Street
Troy, New York 12180

Or could it be a pessimism about our ability to flourish—or even survive—on Earth?

Dear Ben:

I'd like to bring something important to the attention of the readers of Analog.

It is widely known, but of course not by everyone, that the home of Forrest Ackerman—called Ackermansion—contains the largest science-fiction and fantasy collection in the entire world. What this means is that on the interior walls of the building hang hundreds of original paintings of science-fiction magazine covers dating back to 1926.

It also means that occupying bookcases that fill room after room are the magazines themselves: every issue of every science-fiction magazine published anywhere in the world, as well as every science-fiction fan magazine ever printed—over ten thousand different fanzine titles. Other bookshelves contain every edition of every science-fiction and fantasy book published in the universe. Elsewhere in the collection are thirty-five thousand stills from all the science-fiction films ever made.

It's all there: the record of the science-fiction explosion of the Twentieth Century, more than one hundred thousand items of science-fiction memorabilia.

Its value at the end of 1973: roughly one million dollars.

In the owner's will it is set up to become a science-fiction museum. Not a single piece is to be sold. No direct heirs will benefit.

But, alas, there's a fly in the eye

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of Forry's future. The nine-year-old boy who started to collect early *Amazings*, and slightly later, Analogs (called Astounding Stories of Super-Science at that time), is no longer nine. In fact, he's fifty-seven. In fact, he had a heart attack a few years ago. And he's got to handle himself carefully, or he won't see the year 2001.

The reason I bring all this to your attention is that, as a friend of Forry, I observe that at fifty-seven he has undertaken a project which, in my opinion and that of some other friends, is too much for him. He has moved his vast collection from a cramped and crammed two-story house to an eighteen-room location at 2495 Glendower Avenue, Hollywood, California 90027. In order to have the new place he has to pay out a long-run (with interest) total of a quarter of a million for the future museum. The down payment took every penny he could borrow from relatives. The monthly payments are astronomical. It's too much—I believe—for one man, who will be sixty in a couple of years. And, if you think about it, it really shouldn't be up to one person to single-handedly create a science-fiction museum.

So, what I propose is that periodically you and I slip a dollar, or two, or three into an envelope, and send it to the above address. A dollar for a millionaire. But it's a million that he *spent* on the love of a lifetime: science fiction.

A. E. VAN VOGT

Not only private individuals, but corporate and professional entities (such as SFWA) should contribute to this.

Dear Mr. Bova:

The naturalist Ivan T. Sanderson founded an organization called SITU, Society for Investigation of The Unexplained, which researches various uncommon phenomena.

Unfortunately, this organization by its very nature discriminates against that large group of successful scientists who would rather explain than investigate. Therefore, it is hereby proposed that an organization be formed to be called "Society for Explaining The Uninvestigated" or SETU. Its purpose will be to recognize outstanding achievement in explaining uninvestigated phenomena. Prospective members will be nominated for election on the basis of the following criteria:

1. The speed with which the nominee's opinions are crystallized.

2. Measure of the lack of correlation between the nominee's explanation and the actual facts concerning the phenomena or events being explained.

3. The conviction with which the nominee holds to his stand in the face of facts revealed by those persisting in investigation.

4. The degree of successful repression of publication of opposing views in professional journals.

5. Pontification in his own and other fields.

6. Finally, the nominee's efforts to provide another datum point for Clarke's First Law. ("When an elderly and distinguished scientist says that something is possible, he is most likely correct; when he says that something is impossible he is invariably wrong.")

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A potential membership list for SETU includes many distinguished thinkers. Charter membership nominations are humbly requested.

It is very important that total membership be kept to a minimum so that any member can feel that he is especially honored to belong to a group of the elite.

R. C. McConnell, PhD
A. K. Andrews, ScD
P. O. Box 9612
Greensboro, North Carolina 27408

Could we nominate politicians, too?

EDITORIAL *continued from page 7*

will be vastly changed once we contact other intelligent races. The changes could be improvements, even though Wald seems unwilling or unable to accept that possibility. Cultures do evolve and adapt to changing environments, and not all the changes are destructive. Witness the way the Japanese are blending the best of their culture with many features of Western culture.

Montagu made the point that human beings behave so abominably toward one another that we are bound to disgust anyone who contacts us. He urged that we learn how to get along together, in preparation for such interstellar contact. He also suggested that when contact is made, all government officials and agencies be kept strictly out of the picture. Only us enlightened professors ought to be involved.

This was a crucial statement; it illuminated the entire mind-set of the whole panel, I think.

Montagu castigated the human race sternly. In his words, we've ". . . corrupted the spirit of man and made him the most dangerous creature on Earth."

As a sermon, it was fair. As a comment about discovering life elsewhere in the universe, it was wide of the mark by a few parsecs. H.G. Wells said it earlier, and better, and oftener.

Stendahl, the theologian, suggested that contact with extraterrestrials would force people to face the question of whether or not their conception of God is totally anthropomorphic. Again, an old science-fiction theme: What happens when the six-legged slimy uglies from Arcturus claim that God created *them* in His image?

It was Morrison who made the unkindest cut of all. After listening to all of the above, he described how he thought radio contact would be made and gloried in the vast amounts of knowledge that we would gain from such contact. Fine. He is an utterly rational man. Then he went on to say:

"But I hope very much that the universe of circumstance is wider than the rather shoddy imaginations of science-fiction writers during the past thirty or forty years. I am pretty well convinced it is. We have not found their guidance so

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great in any but the most modest activities, like going to the Moon. Science fiction of a hundred years ago told us how to go to the Moon, and we have done that."

I don't mind terribly much the fact that these experts failed to come up with any new insights that haven't been studied in literally hundreds of science-fiction stories over those same thirty or forty years. I do resent the fact that Morrison—who is truly brilliant in fields where he has some knowledge and experience—should take *us* to task! Especially when his very words indicate that he hasn't read any of the science fiction that has dealt with the subject!

From "The War of the Worlds" to James Gunn's "The Listeners," science-fiction writers and readers have thought about, discussed and debated the possibilities of extraterrestrial life in far more detail than the BU panelists did. In science fiction, we have examined problems and propositions that never even occurred to the panelists. For example:

In Stanley Schmidt's novel, "The Sins of the Fathers" (recently serialized here in Analog), the question of motivation was central: Why would another race *want* to contact us, or anyone else?

Remember Montagu's remark about keeping government people out of the picture? I think it was the key to the major failing of the panel.

Each of the panelists—the so-called experts—is a university professor. Each of them assumed, quite automatically, that whoever contacts us from Out There will be intellectually similar to themselves: alien university professors, driven by pure curiosity to contact other campuses around the galaxy.

This is the pathetic fallacy that experts often fall into: intellectual anthropomorphism. "This is the way I would do it, so it must be the way they will do it." It's an easy trap to fall into.

And the next step is even easier. The expert says to himself, "Since I know the right way to do it, all other ways must be wrong." A man with a steel-trap mind isn't very valuable when the trap's snapped shut and rusted so badly that it can't be opened again.

These men were not experts. Not on the subject of extraterrestrial life.

OK, so there are no experts in that field. Not yet. But there is a large body of people who have a considerable amount of "practice, skill, experience and knowledge" about the subject. It's all theoretical work, true. But it's far more than the BU panelists displayed.

It's us, of course. The science-fictioneers, both readers and writers. Certainly within my own lifetime, there has been more thought, conjecture and study of extraterrestrial

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life by science-fiction people than by any other group of people on Earth. We have used the thought and research of men such as Sagan and Morrison as a starting place, a jump-off point, a solid foundation for considering the possibilities and consequences of contacting alien intelligences.

That's why this distinguished panel of "experts" came across sounding like 1940-ish science fiction. They've been studying physics and chemistry and biology. They've been grumbling about man's fallen state. They have *not* been thinking about the realities of extraterrestrial life.

But if the "experts" want to bring themselves up to date on the latest studies of the subject . . . Analog wouldn't be too bad a place to start!

A few words about the effort to get the Post Office to issue a stamp honoring John Campbell.

Nothing's happening.

Not enough people have written to the Postmaster General. And the Post Office moves rather slowly in these matters anyway, unless someone lights a fire under them.

So—here's a match, and I'll tell you where to find the kindling.

The way things get done in Washington is sometimes rather indirect. There are Congressional committees that can influence the Post Office. So, if a *large* number of Congressmen and Senators began getting letters from their constituents urging a commemorative stamp for John Campbell, the PO just might get nudged.

Write to your Congressperson and Senators. Use important-looking company or group stationery. The more affluent the letterhead appears, the more impressed will be the politicians. We should all write to the members of the House and Senate Science and Astronautics Committees. Each of the Congresspersons and Senators will pass your letters on to the Postmaster General; but when the letters come from the Capitol, they apparently have more effect than those that come directly from private citizens.

The letters should be short, factual, and quietly urgent. They should point out that science fiction has been a major influence among young people, that most of our astronauts got "turned on" to science by reading SF, that science and technology are vitally important to the US, and that John Campbell was the towering figure in the SF field from the 1930's until his death in 1971.

We still may be unable to get a Campbell stamp issued, but we should at least try every possible avenue. And this approach will force you to find out who your Congressperson is. It might be the start of a beautiful (or at least interesting) correspondence!

THE EDITOR

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Drunk drivers add color to our highways.

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